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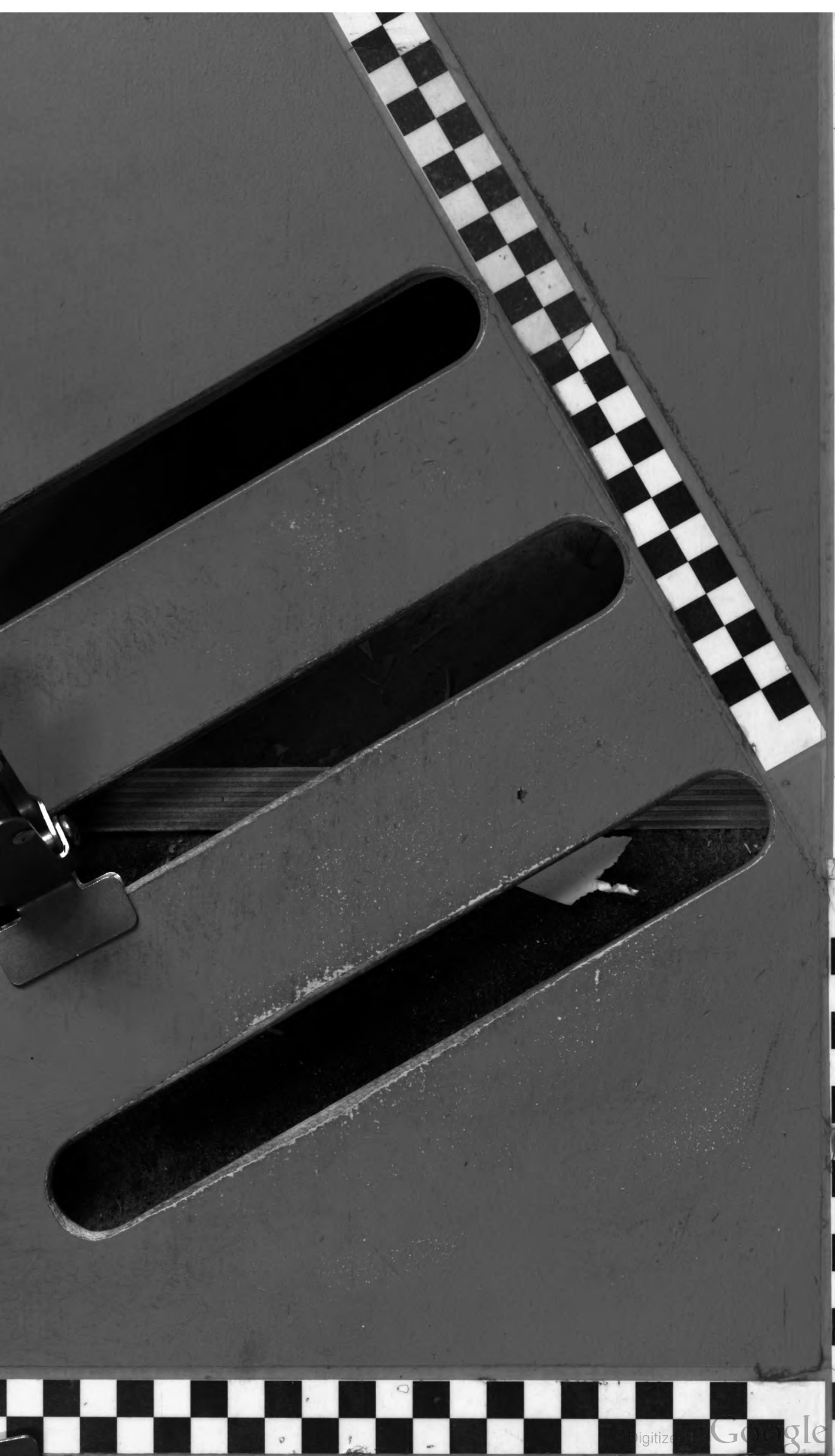
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The Hub

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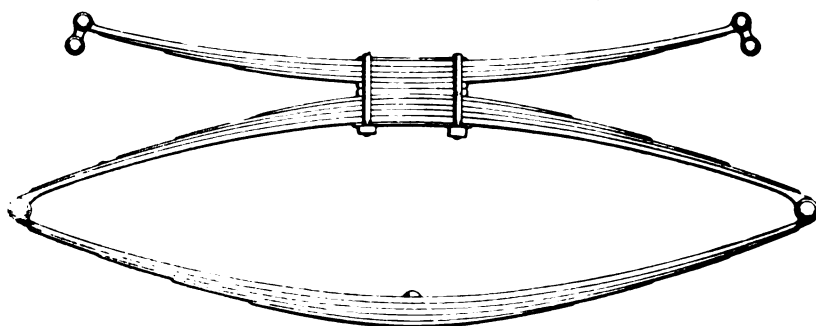
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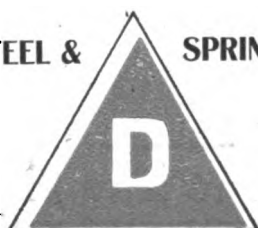


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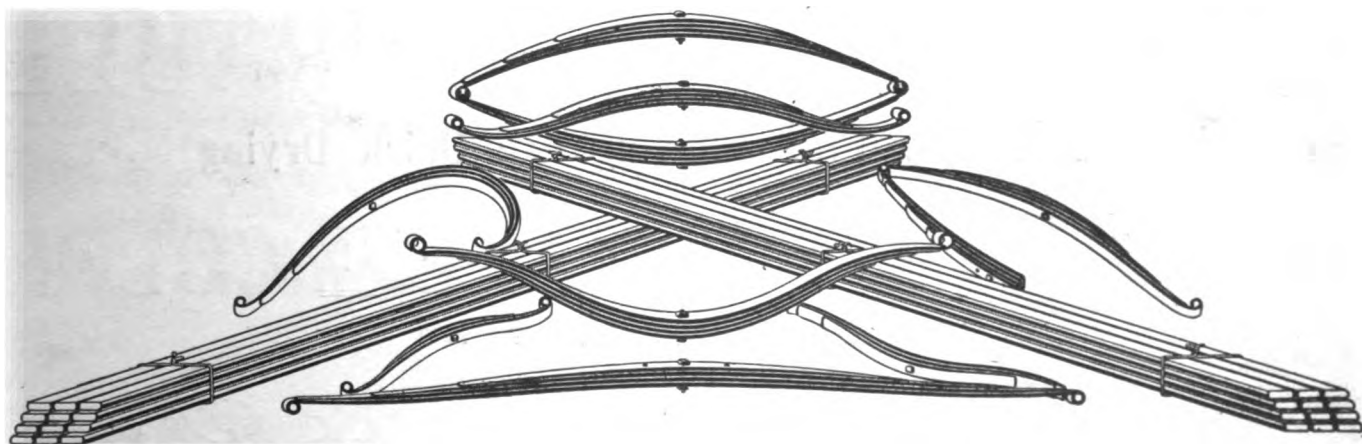
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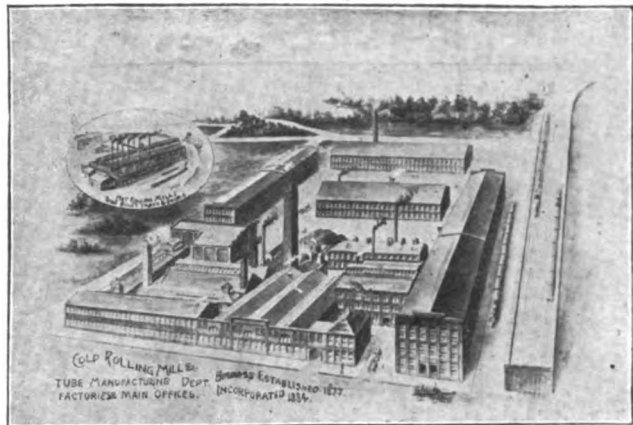
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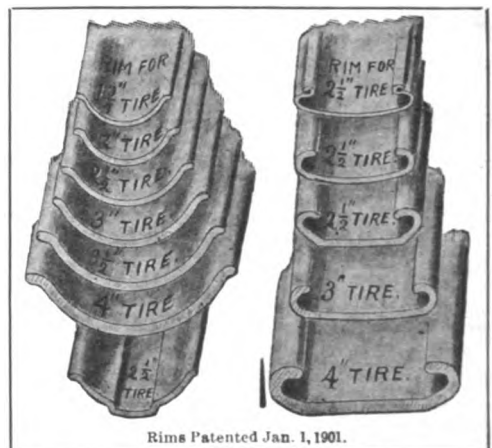
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ARE ABSOLUTELY THE FINEST MADE.

WE take pleasure in furnishing samples of the colors we make, so that the consumer may be convinced of the richness and tone of our colors before purchasing.

DETROIT WHITE LEAD WORKS, DETROIT. CHICAGO. BUFFALO. MEMPHIS.




PALM, FECHTELER & Co.	<p>YOU KNOW OUR</p> <h1>TRANSFERS</h1> <p>IF NOT, TRY THEM.</p>	<p>3 W. 13TH ST. NEW YORK. 45 LA SALLE ST. CHICAGO. 207 ST. JAMES ST. MONTREAL.</p>
------------------------------------------	-----------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------

BERRY BROTHERS

(LIMITED)

MANUFACTURERS OF



CARRIAGE VARNISHES

NEW YORK, BOSTON, PHILADELPHIA,
BALTIMORE, CINCINNATI, CHICAGO,
ST. LOUIS, SAN FRANCISCO.

FACTORY AND MAIN OFFICE **DETROIT**



**MONOGRAM
DROP BLACK**

EXTRA FINELY GROUND IN JAPAN
GEO. E. WATSON CO.
MANUFACTURERS
CHICAGO, ILL.

A Good Black

at a low price is a very difficult article to get. We have one in our

"Monogram Drop"

put up in 5 or 10 pound press cans, like cut, at

16cts. per pound, net.

Also Colors, Brushes, Pumice Stone, Rubbing and Rotten Stone, Sponges, Chamois, Rubbing Felts.

GENERAL WESTERN AGENTS FOR
BUEHNE'S STEEL WOOL

Takes place of Sandpaper and Pumice. Samples and Price List for the asking.

BRUSHES.



We make a specialty of Brushes for Carriage and Wagon Makers.

Send for our Net Price List of Carriage Painters' Materials and Supplies mailed on application.

GEO. E. WATSON CO.,

Paints, Oils, Varnishes, Brushes, Painters' Supplies and Artists' Materials, Carriage Painters' Specialties.

38 EAST RANDOLPH STREET, CHICAGO.

Wholesale Agents for Eureka Rubbing Stone.

DURABLE.

RELIABLE.

WM. HARLAND & SON,

MERTON, SURREY, ENGLAND

English Varnishes



AND Coach Colors.

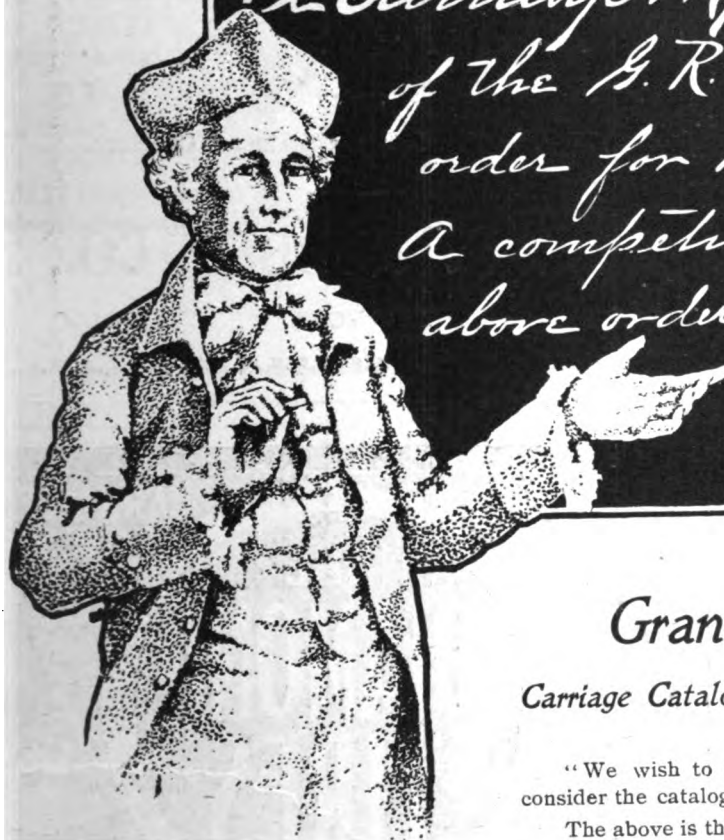
—BRANCHES:—

4 GOLD STREET, NEW YORK.

Paris, France, and Milan, Italy.

BRILLIANT.

ECONOMICAL.



A Carriage Mfg. Co. bought an \$18.00 cut of the G. R. Eng. Co. It captured an order for 150 jobs at \$80 each. A competing concern lost the above order, because of a poor \$7.00 cut. Who gains?

Grand Rapids Engraving Co.,
Carriage Catalog Makers. GRAND RAPIDS, MICH.

"We wish to compliment you on the excellent work you have done for us. We consider the catalog you furnished us the finest we ever sent out."
The above is the unanimous verdict of all the carriage people we have done work for.

The Modern Sign Writer

AND

Up-to-Date Ornamenter

IS WORTH DOUBLE THE PRICE.

5 Plates of Alphabets, Sign Lay-Outs and Scrolls, printed in Colors. Price, \$2.00 postpaid.

TRADE NEWS PUBLISHING CO.,
24-26 Murray St., New York.

Varnish Troubles

and Color Kinks.

May be avoided by using the best goods on the market.

WRITE TO

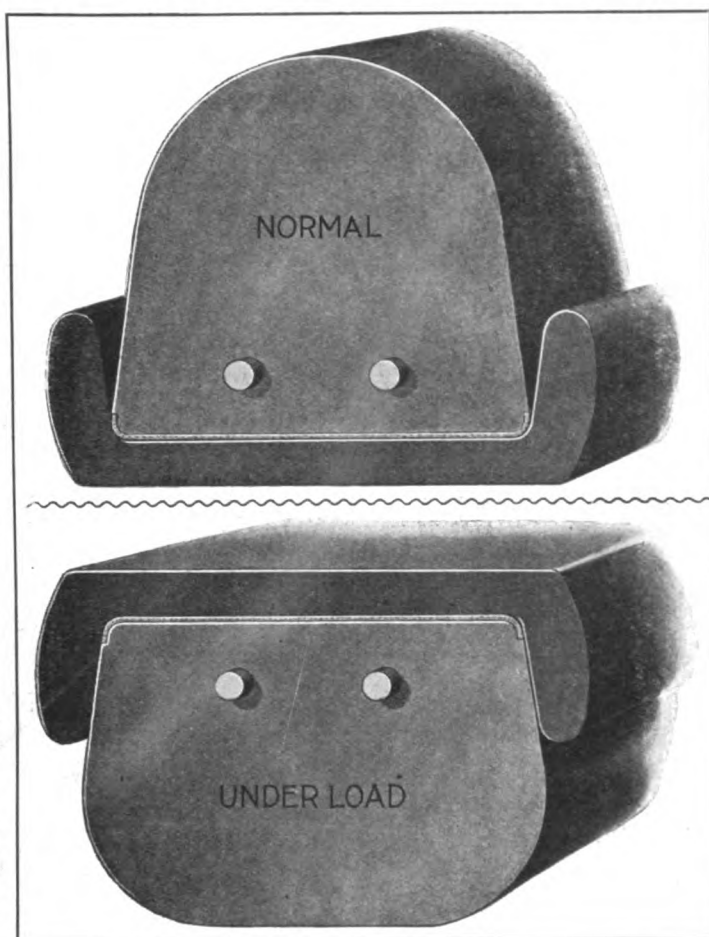
FELTON, SIBLEY & CO.,

Makers of High Grade Varnishes and Superfine Colors.

136-140 North 4th Street,
PHILADELPHIA.



Please mention "The Hub" when you write.



Carriage and... Automobile Trade

FURNISHED

RUBBER, CHANNELS, WIRE

AND TOOLS FOR APPLYING.

SIZES: 3-4 IN. to 3 IN.

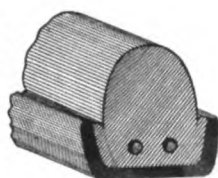
This Tire Fits Into the Standard Channel.

REVERE RUBBER CO.,

BOSTON.

NEW YORK.

CHICAGO.



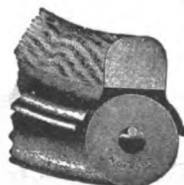
DAVIE & Co.

MANUFACTURERS AND DEALERS IN

Rubber Goods,

LET US FIGURE FOR YOUR SPRING TRADE.

1310-1314 Wallace Street,
PHILADELPHIA, PA.



**BICYCLE
TIRES**

**CARRIAGE
TIRES**

**THE
DIAMOND
TIRES.**

**MOTOR VEHICLE
TIRES**

**DIAMOND TIRES
ARE CONSIDERED RELIABLE**

By those who know from experience. There are more Diamond Tires placed on Bike Wagons this year than all others combined. Why? Because consumers are finding out that the tire is the best and that the makers use a fine grade of rubber, strong fabric, and know how to put them together.

MADE IN AKRON, OHIO,

BRANCHES where punctures are repaired:

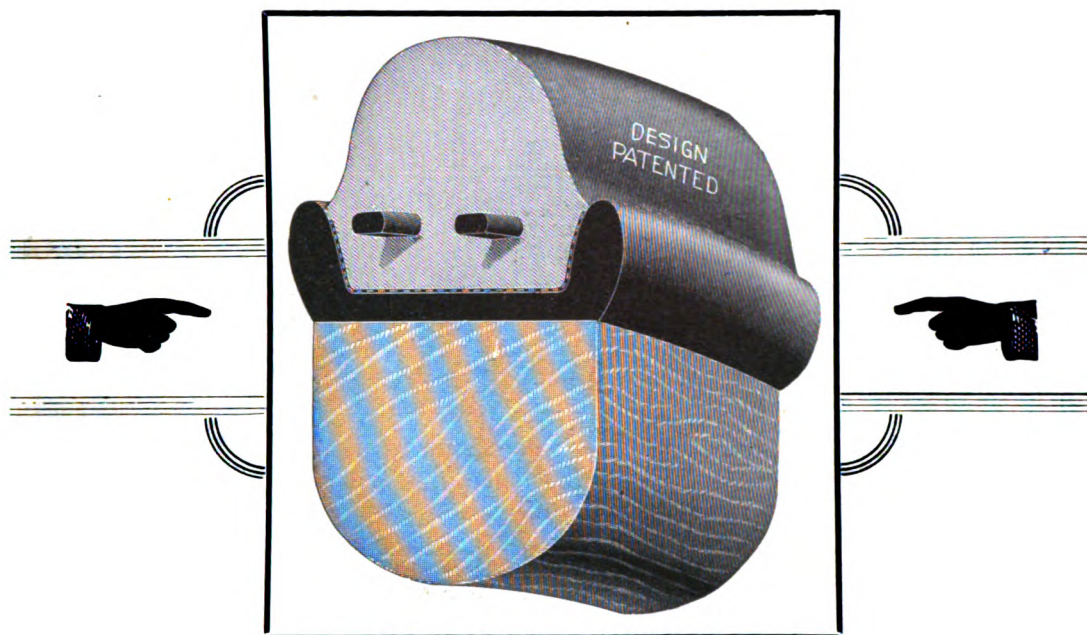
New York City, 215-W. 53rd St.
 Boston, 7½ Appleton St.
 Buffalo, 9 W. Seneca St.
 Chicago, 431 Wabash Ave.
 Philadelphia, 435 North Broad St.

**THE DIAMOND
RUBBER CO.**

Please mention "The Hub" when you write.

THE INDIA.

IS THE BEST AND WE PROPOSE TO KEEP IT SO.



Did you see us at the New York and Cincinnati Shows? If not, you missed a good thing.

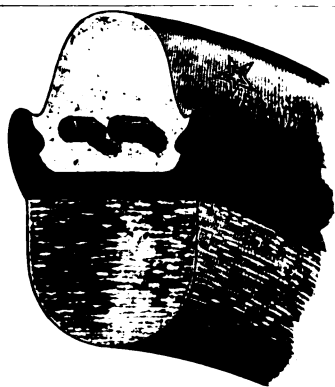
We were there for Business and got the Lion's Share.

Manufacturers and Dealers alike were convinced that the "INDIA" has the Best Tire on the Market.

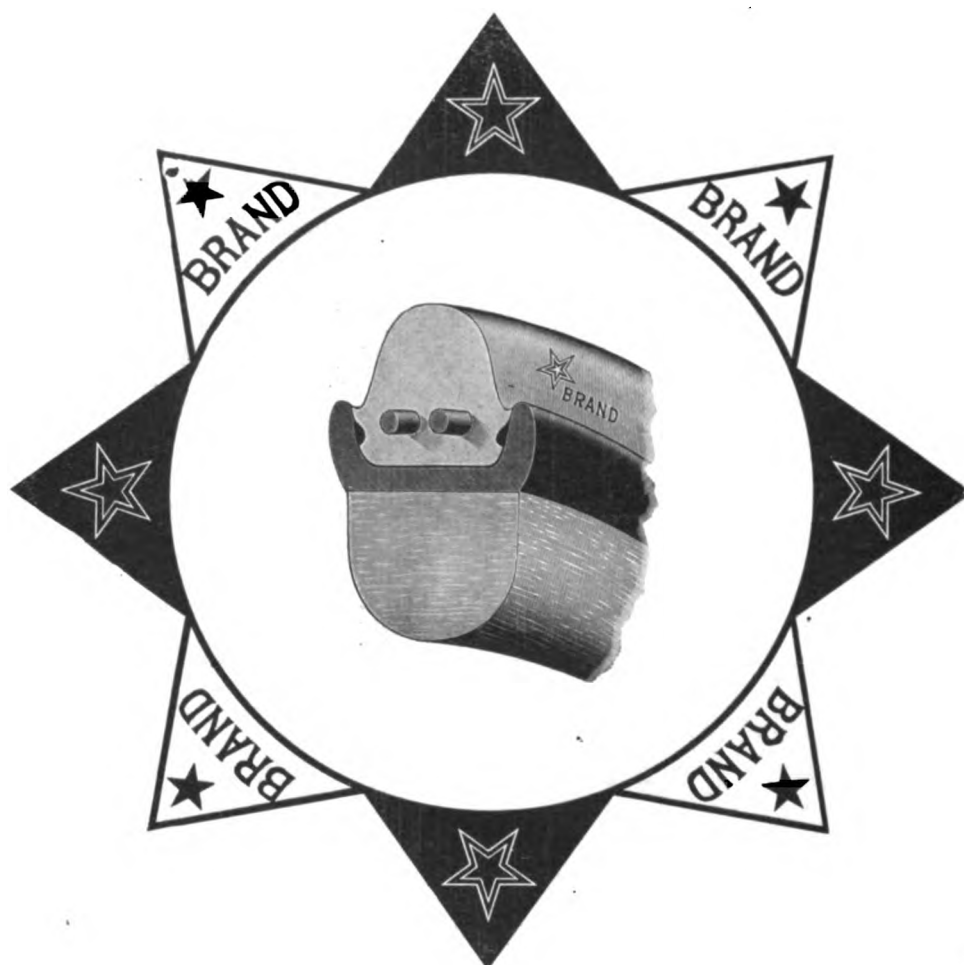


INDIA RUBBER CO.,

AKRON, OHIO.



OUR STAR BRAND SOLID RUBBER TIRE, HAVING PROVED ITSELF TO BE ALL WE CLAIM, WE NOW CHALLENGE THE WORLD TO PRODUCE ITS EQUAL. IT FITS ALL STANDARD CHANNELS. THE GROOVE IN THE SIDES OF THE RUBBER PROVIDES FOR PROPER DISPLACEMENT WHEN UNDER A LOAD, STOPS THE CREEPING, MAKES IT RIDE EASIER AND LAST LONGER. IT HAS NO PEER.



WE supply Tools at small cost with complete instructions for putting on in your own shop, and guarantee to teach you to do as perfect a job of Rubber Tiring as can be done, or no sale. We respectfully solicit your business.

♦♦

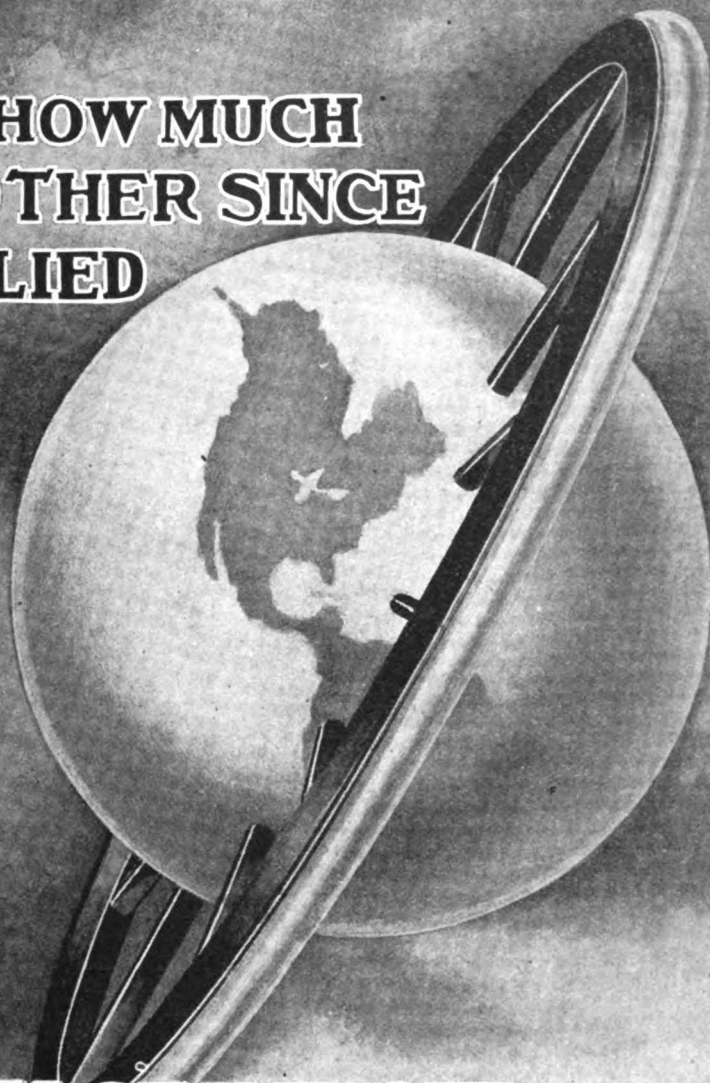
BATAVIA RUBBER TIRE CO.,
BATAVIA, N. Y.

WESTERN BRANCH: STAR RUBBER TIRE CO., MOLINE, ILL.

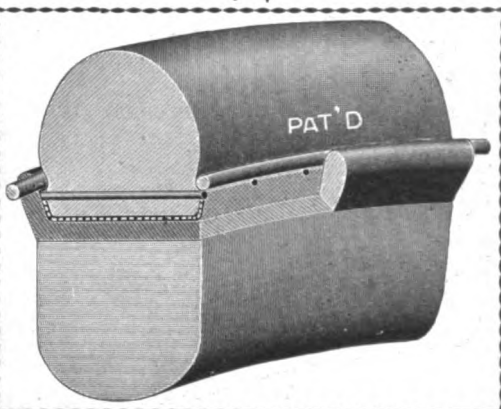
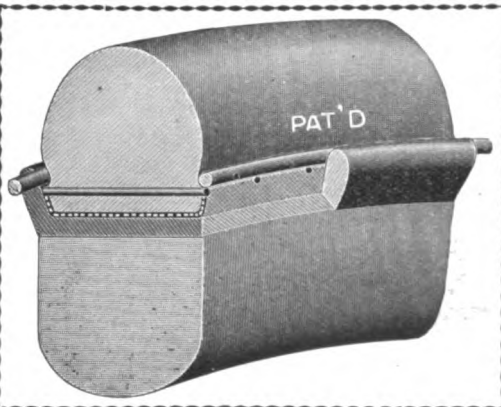


THE WORLD MOVES

**BUT-HOW MUCH
SMOOTHER SINCE
SUPPLIED
WITH**



**KELLY-SPRINGFIELD TIRES
THE BEST
SOLID RUBBER TIRE ON
EARTH.**



Our Claims are Broad!

NEATEST IN APPEARANCE.

EASIEST RIDING.

GIVES TWICE THE SERVICE OF THE OLD STYLE WIRE AND BAND TIRES.

EASILY APPLIED WITH AN INEXPENSIVE MACHINE.

WRITE US FOR CATALOGUE AND SAMPLE AND WE WILL GIVE YOU "FACTS" THAT WILL PROVE OUR CLAIMS.



Firestone Tire and Rubber Co.,
AKRON, OHIO.

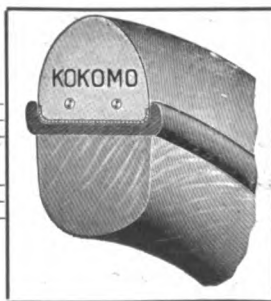
BRANCHES:

1788 Broadway, New York City.
367 Wabash Avenue, Chicago, Ill.

65 Beverly Street, Boston, Mass.
2212 Olive Street, St. Louis, Mo.

GOOD TIRES,
GOOD PRICES AND GOOD TREATMENT

ARE WHAT YOU



CAN GET FROM THE

Kokomo Rubber Co.
Kokomo, Indiana.

CHICAGO BRANCH, 135-137 LAKE STREET,

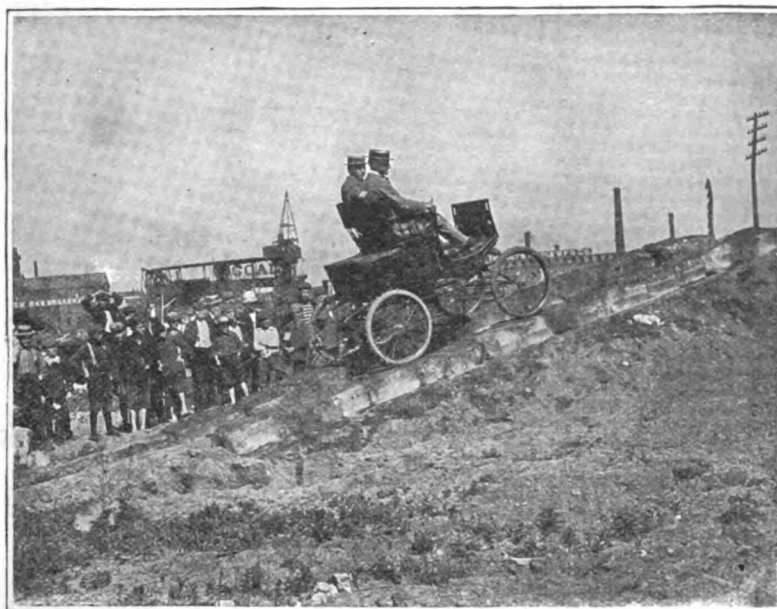
W. H. COOLIDGE & CO., Managers.

"The Tire Problem Successfully Solved at Last."

*Such is the verdict of Leading Motor Carriage Manufacturers
who have carefully examined the newly patented.....*

ENLIND "Non-Slipping" and "Puncture-Proof" Tire For Motor Carriages.

Adapted for both Pneumatic and Solid Rubber Tires.



A Locomobile equipped with the Enlind "Non-Slipping"
and "Puncture-Proof" Tire successfully ascending
an ice grade of 36°.

Send us your order NOW for WINTER TIRES, so as to SECURE PROMPT SHIPMENT, and THEREBY INSURE SAFETY, CONVENIENCE and SURE PROGRESS over ice and through deep snow; up hill and down dale. IS FAST, SMOOTH RUNNING, AND ALWAYS GETS THERE "ON TIME."

Write to us for description of tests by experts.

MANUFACTURED BY THE

ENLIND MANUFACTURING CO.,

Capital \$1,000,000.

WORKS:
BROOKLYN, N. Y.

Dr. KANUTE ARVID ENLIND,
President.

Executive Office:
41 Wall Street, New York, N. Y.

Judge HENRY W. SCOTT,
Vice-President.

JOHN F. GILDEA,
Sec'y and Treas.

(A limited number of Shares of the Capital Stock of the Company are yet available for purchase; for particulars, address Messrs. SCOTT & MCINTYRE, Counselors, 41 Wall Street, New York, N. Y.)



WE have no connection with the CONSOLIDATED RUBBER TIRE CO., but our intimate relations with the largest Importers of Crude Rubber in America enable us to furnish SOLID RUBBER TIRES of UNAPPROACHABLE QUALITY at prices the TRUST cannot duplicate.

STANDARD SHAPE, TWO WIRES, FULL SIZE, but LIGHT WEIGHT, owing to their HIGH QUALITY.

EACH LENGTH BEARS OUR FULL NAME AND TRADE-MARK.

KELLY SPRINGFIELD RUBBER TIRE CO.



Trade
Mark.

We are not in the Trust. We pay no ROYALTIES, but put the VALUE IN THE RUBBER.

We have a Five Year Contract Guaranteeing Quality and Workmanship, also that the Compound will Remain Unchanged.

FOR SAMPLES AND PRICES, ADDRESS

Kelly Springfield Rubber Tire Co.

Incorporated August 31, 1899.

ROBERT KERCHEVAL, President.



. . . . DAVENPORT, IOWA.

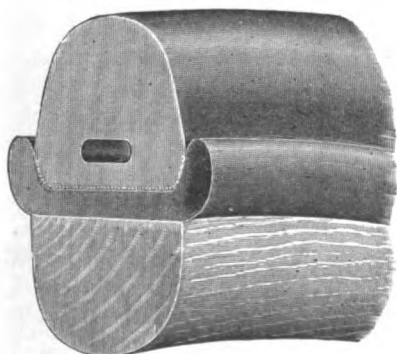
RESULTS

Guaranteed
As Good
As Any
Two-Wire
Tire.



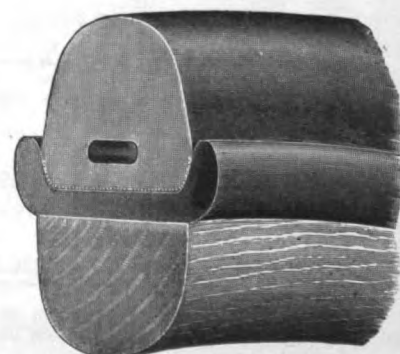
PRICES

Are
Reasonable.
Quality
Is The
Best Made.



Pennsylvania Rubber Co.,

ERIE, PA.



Please mention "The Hub" when you write.



SEE THE ONE WIRE AND ITS BEARING ?

VEHICLE TIRES.

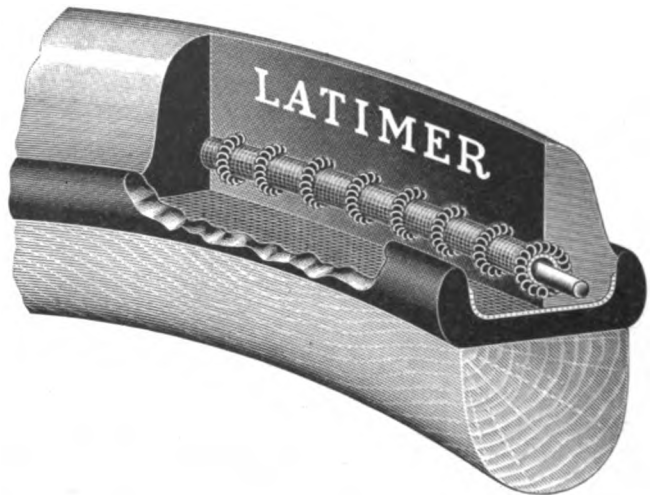
The Only Tire in Which Retaining Wire Is So Protected That All Danger of Cutting Out Rubber Is Eliminated.

**THE
LATIMER RUBBER TIRE
CO.**

NEW YORK,
15 Platt Street.

CHICAGO,
24 South Clinton Street.

WORKS:
HUNTLEY, ILLINOIS.

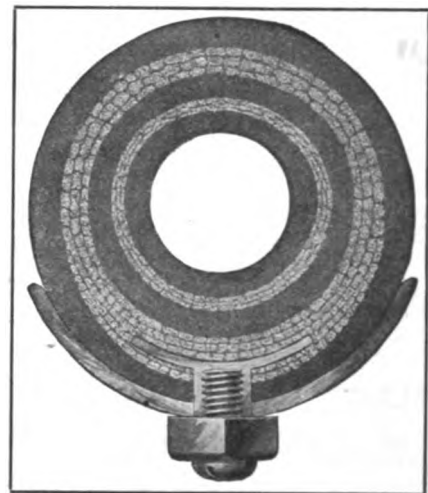


NEW YORK VEHICLE TIRE

IS THE ONLY
PNEUMATIC LONG DISTANCE TIRE
TO GIVE PERFECT SATISFACTION.
ADOPTED BY THE PRINCIPAL

Carriage Manufacturers and Dealers.

THE ONLY TIRE TO STAND THE
STRAIN ON TRACTION WHEELS OF
AUTOMOBILES.



WRITE FOR PRICES AND
BOOKLET.

NEW YORK BELTING & PACKING CO., Ltd.

BRANCH 25 PARK PLACE, **STORES**
NEW YORK, N. Y.

BOSTON,

24 Summer St.

PHILADELPHIA,

724 Chestnut St.

ST. LOUIS,

411 No. 2nd St.

CHICAGO,

180 Lake St.

INDIANAPOLIS,

229 So. Meriden St.

BALTIMORE,

101 Hopkins Place.

SAN FRANCISCO,

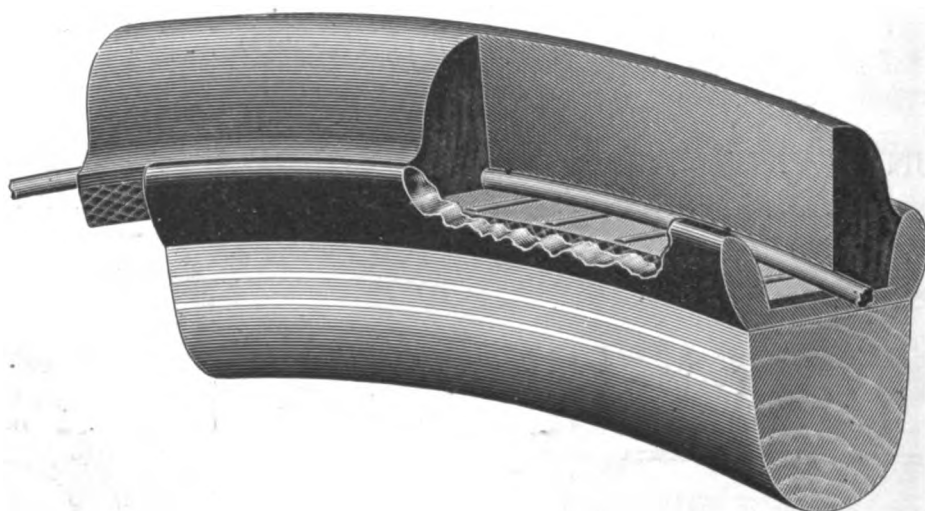
509 Market St.

*The Hub***"WEMAKA"**

PERFECT VEHICLE TIRE

Perfection in Tire Construction.

Wise Buyers
Buy Cross Wire Tires!



CROSS WIRES are to a tire what a railroad tie is to the rail---a support.

NO EXPERIMENT---one year in service has convinced the user, manufacturer, our competitors and ourselves that it is all we claim for it.

Fifty years we have been compounders and vulcanizers of Rubber, which insures the buyer that our Rubber is right, and made to withstand wear.

N. J. CAR SPRING & RUBBER CO.,

175-177 Lake Street,

FRED'K G. DAVIS, Gen'l Mgr.

Chicago, Illinois.

Please mention "The Hub" when you write.

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We make only the highest grade of tires, and our reputation for
UNIFORM HIGH QUALITY will be maintained in

HARTFORD SOLID CARRIAGE TIRES

They will be backed by the name
of this company as a guarantee
of excellence.

We shall be pleased to
have our representative
call upon those in the
trade who are inter-
ested in this finest
quality solid rub-
ber carriage
tire.


**OUR
TIRE
MACHINES**

are now ready and are attracting wide
attention and merited praise as

PERFECT MACHINES

from the standpoint of

**SIMPLICITY AND
EFFICIENCY.**

These machines are time savers and being such
they are money savers as well.

**THE HARTFORD RUBBER WORKS CO.,
Hartford, Conn.**

BRANCH HOUSES:—

Boston, New York, Philadelphia, Chicago, Buffalo, Washington, Cleveland,
Detroit, Minneapolis, Denver, San Francisco.

"Every time a man is fooled another skeptic is made."

Other
tire companies
are making
several grades
of tire compound.

**WE ONLY MAKE
ONE GRADE**

and five years of service
has demonstrated
that it is the
best in the world.

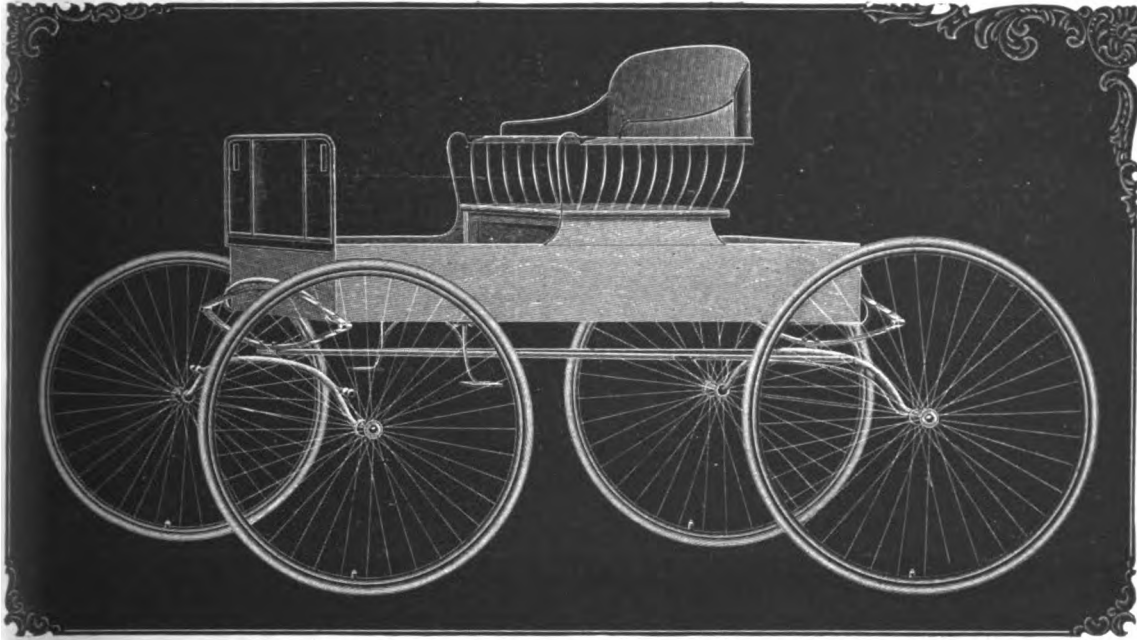
Don't experiment with
cheap rubber;
it won't pay.

THE
Victor Rubber Tire Co.
Springfield, Ohio.

Please mention "The Hub" when you write.

THE FRANTZ "AKRON."

BODIES, BIKES IN THE WHITE, GEARS,



WE SELL THEM
CHEAPER THAN
YOU CAN MAKE
THEM

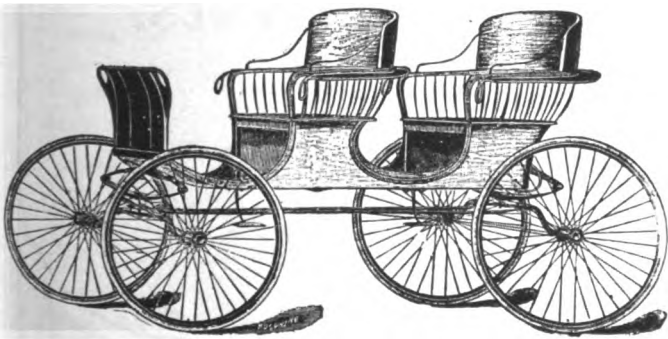
WE NAME A
SURPRISING LOW
FIGURE ON THIS
BIKE.

ORDER SAMPLE.

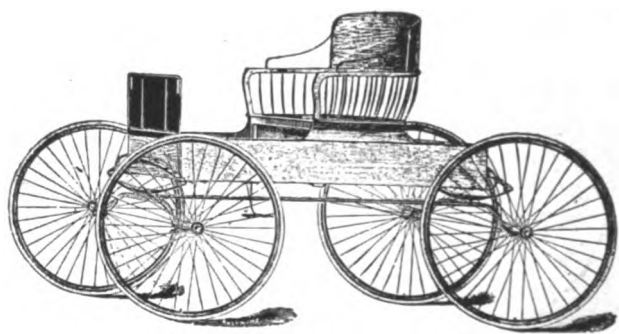
NO BETTER VALUE FOR THE MONEY ON THE MARKET.

THE FRANTZ BODY MFG. CO., AKRON, OHIO.

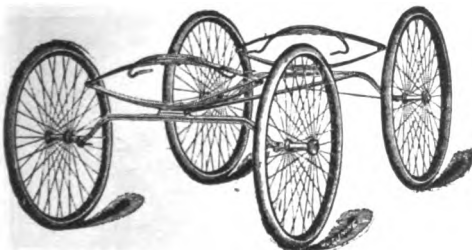
FITCH GEARS



FITCH PNEUMATIC SURREY (In-the-White).



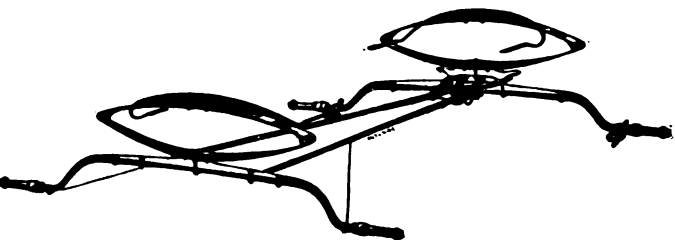
FITCH PNEUMATIC ROAD WAGON (In-the-White)



FITCH PNEUMATIC ROAD WAGON GEAR.

PRICES TO SUIT
THE TIMES.

Send for our latest
catalogue, with
full line of gears,
wagons in-the-
white and carriage
specialties illustra-
ted.



FITCH IMPROVED BIKE AND PNEUMATIC GEAR.

We make Bike Gears and Wagons in-the-White, with Wood Hub Wheels and Solid Rubber Tires.

SHOWING ALL STYLES OF PNEUMATIC AND BIKE WORK.

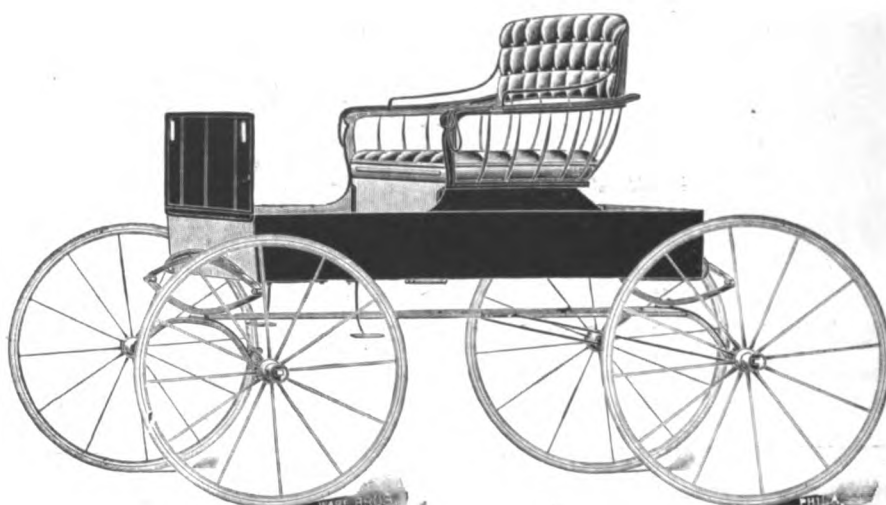
FITCH GEAR CO., Rome, N. Y.

Please mention "The Hub" when you write.



OWOSSO

**MADE
TO
SELL.**



No. 426 DRIVING WAGON.

**SEE OUR LINE OF
Quick Selling, Big Profit Makers.**

IF YOU WANT TO MAKE MONEY SELL THE "OWOSSO."

Owosso Carriage Co.,
OWOSSO, MICH.

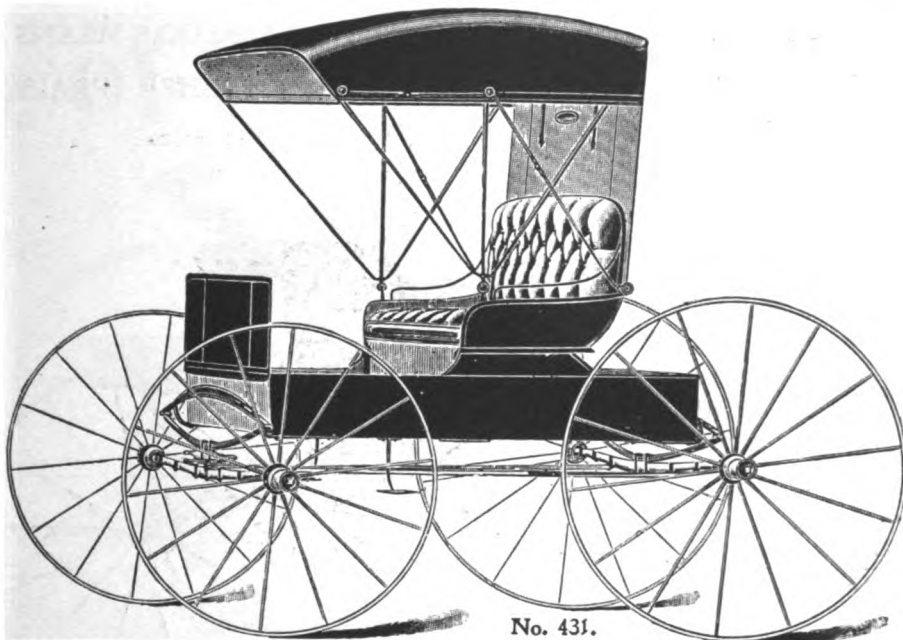
**Send for
Catalogue.**

OWOSSO



**MADE
TO
SELL.**

OWOSSO



No. 431.

**Surries, Speed Wagons, Top Buggies, Road
Wagons, Concord Wagons, Spring
and Delivery Wagons.**

Elegantly Trimmed and Beautifully Finished. Up-to-date in Every Particular.

Owosso Carriage Co.,
OWOSSO, MICH.



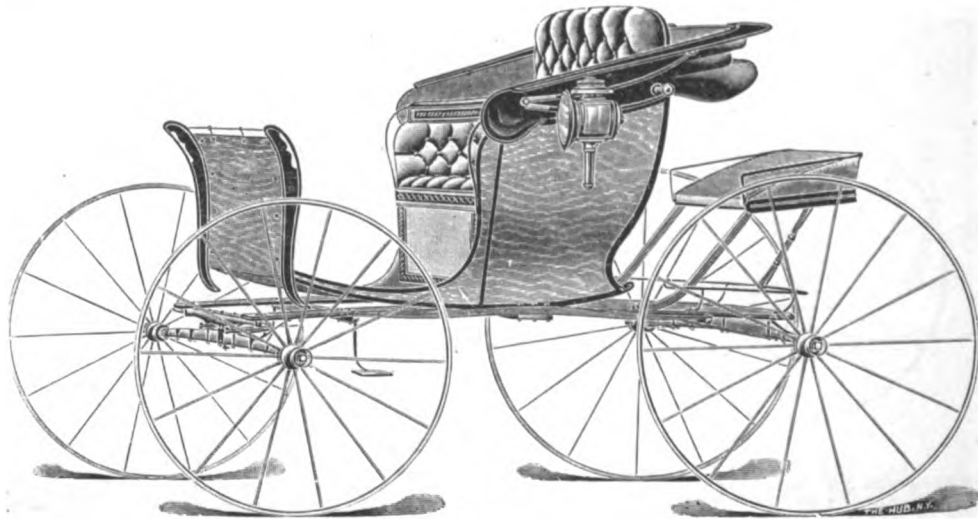
OWOSSO

**Send for
Catalogue.**

THE SUPERIORITY IN DESIGN,

CONSTRUCTION, FINISH AND EQUIPMENT OF OUR FOUR HUNDRED SERIES BUCKBOARDS HAVE MADE THEM THE STANDARD OF COMPARISON FOR OTHER BUILDERS OF VEHICLES IN THE BUCKBOARD LINE.

THE STATEMENT, "AS GOOD AS A WATERLOO," MEANS TO THOSE WHO ARE "VEHICLE WISE," THAT HIGHER PRAISE IS IMPOSSIBLE.



"Waterloo," No. 437, Colonial Spyder-Curricie.

THE CARRIAGE DEALER WHO IS CATERING TO HIGH-CLASS TRADE WILL FIND THIS LINE A DESIRABLE ADDITION TO HIS STOCK, NOT ONLY IN THE CHARACTER IT WILL GIVE, BUT IN THE PROFITS IT WILL MAKE HIM.

CATALOGUE AND PRICE LIST MAILED TO DEALERS, IN TERRITORY NOT ALREADY ASSIGNED, ON REQUEST.

EARLY APPLICATION IS ADVISED.



WATERLOO WAGON COMPANY, Ltd.,
WATERLOO, SENECA CO., N. Y.


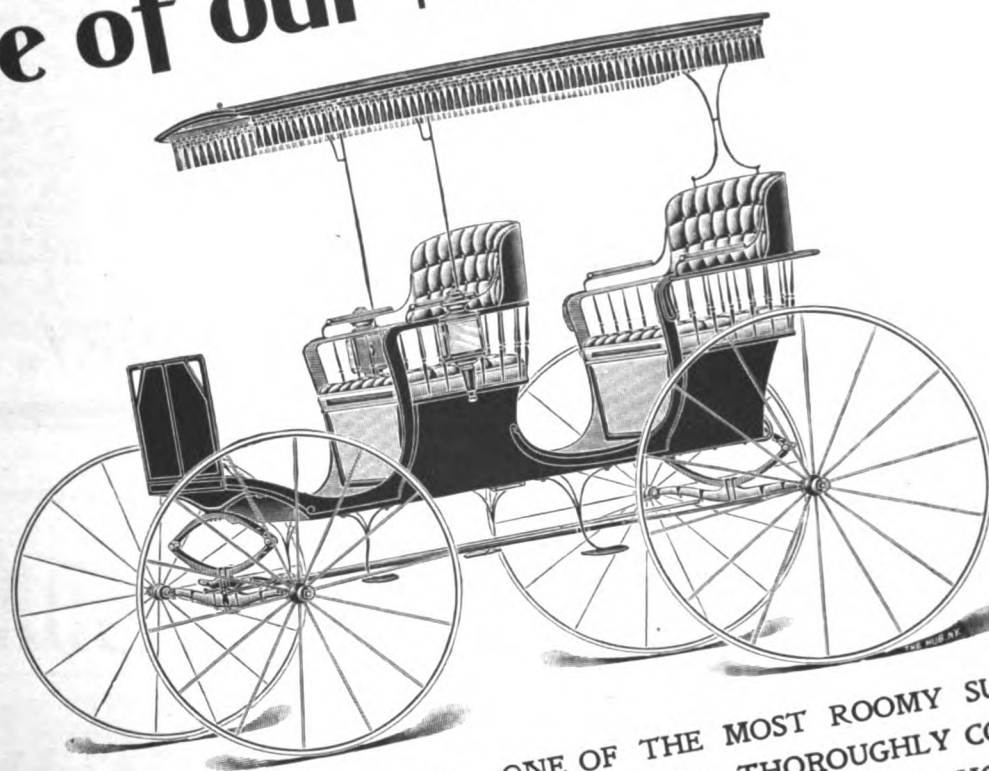
**WAGON
ER
COMPANY
LTD.,**



WAGON
WATERLOO
COMPANY
LTD.,

styles

One of our New Styles



No. 453—MORRISSANIA SURREY. ONE OF THE MOST ROOMY SURREYS
MADE, YET LIGHT AND GRACEFUL IN DESIGN. THOROUGHLY CORRECT
IN EVERY DETAIL. MANY OTHER LATE STYLE VEHICLES SHOWN IN
OUR 1901 CATALOGUE AT RIGHT PRICES. EVERY DEALER SHOULD HAVE
IT. MAILED FREE ON REQUEST.

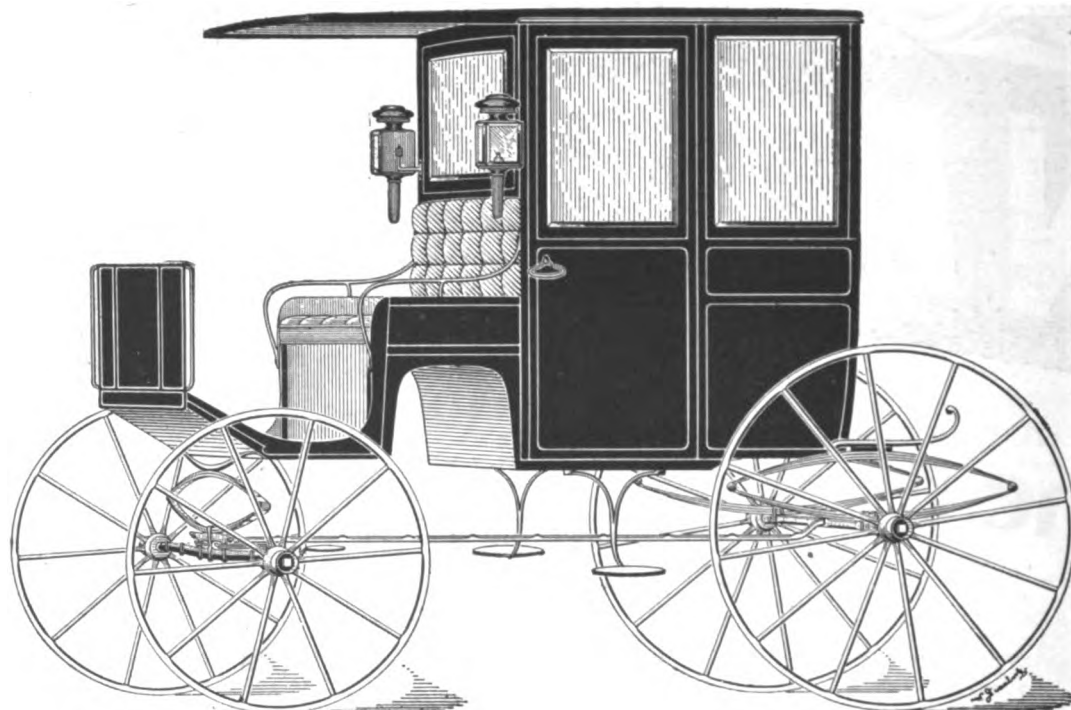
SENECA Co.

SENeca Co.
WATERLOO
N.Y.

Please mention "The Hub" when you write.

MILLER BROS.,

HIGH GRADE VEHICLES
IN-THE-WHITE
FOR THE TRADE.



No. 121 DEPOT WAGON.

WRITE FOR CATALOGUE
AND PRICE LIST.

AMESBURY, MASS.

**“Built for
Business.”**

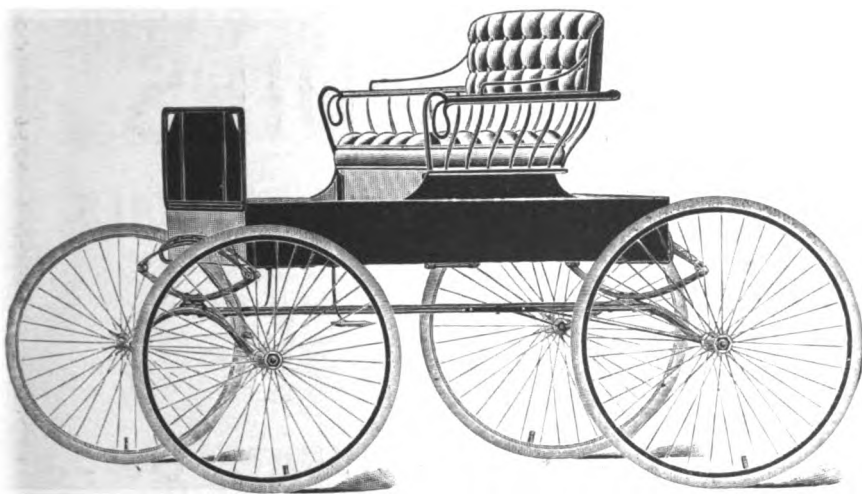
The Lashaway Carriage & Wheel Co.

ARE MAKING AND SELLING A RUNABOUT IN THE WHITE,
AND A BEAUTY.
IT'S RIGHT. WE SAY SO. YOU WILL IF YOU BUY ONE.
WE SELL WHEELS WITH WIRE SPOKES, AND A BRONZE HUB.
WE SELL RUNABOUTS FINISHED. ASK US ABOUT THEM.

The Lashaway Carriage & Wheel Co.,
EAST BROOKFIELD, MASS.

E. F. BUNKER,
Manager.

Please mention "The Hub" when you write.



No. 714. Pneumatic,
Round or Swaged Axles,
22 or 24 inch Body.

Quality, style and price will
interest every progressive dealer.
Ask us for Catalogue and Price
List.

Sullivan Bros.,

ROCHESTER, N. Y.

DO YOU WANT BUSINESS FROM AUSTRALIA AND THE ISLANDS OF THE SOUTH PACIFIC?



Write to J. E. BISHOP & CO., Castlereagh Street, Sydney, Australia,
and 165 Queen Street, Melbourne, Australia.

ADVERTISE IN THE
AUSTRALASIAN Now in its Eleventh
Year of Publication.

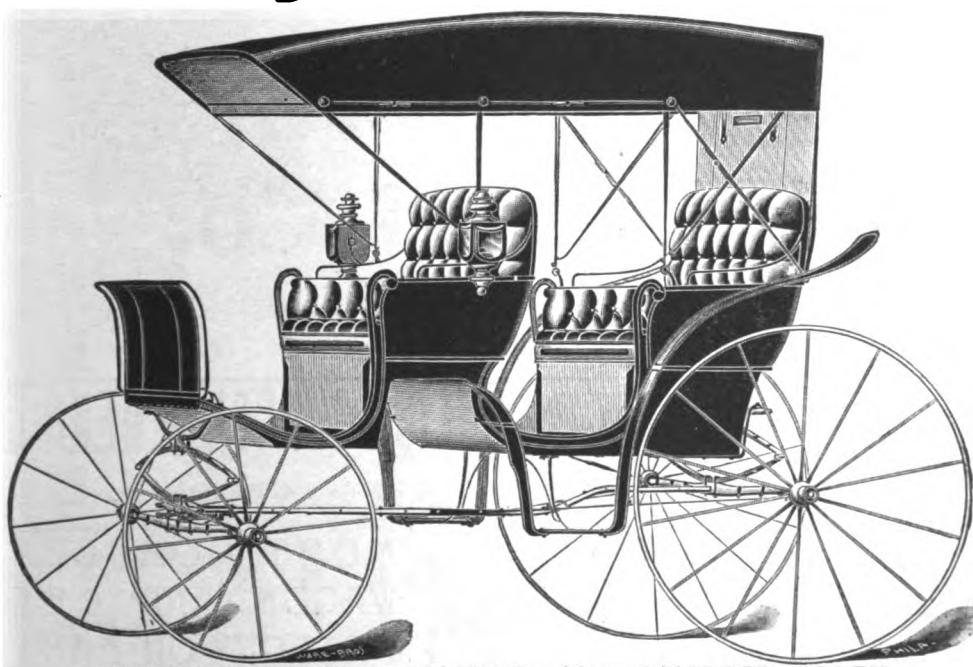
"Coachbuilder and Saddler."

NET ADVERTISING RATES:

Whole Page	One Year	\$195.00
Half Page		106.00
Quarter Page		60.00
Eighth Page		31.00

Contracts for less than one year, one-tenth above rates for each month.

"Youngstown" Dealers' Delight.



"YOUNGSTOWN" No. 84, EXTENSION TOP CUT-UNDER SURREY.

No. 84 "Youngstown" not
only pleases every individual
buyer, but its popularity has
become so universal that in
many sections it has been
styled the "Dealers' Delight."

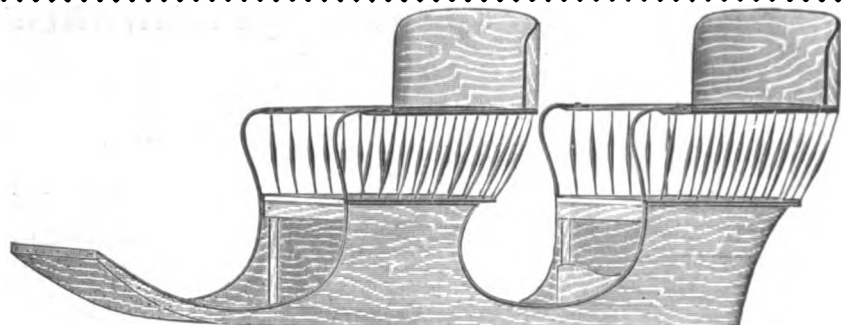
It is strictly high grade in
every detail. Description ap-
pears on pages 6 and 7 of our
catalogue.

The top is best brand hand
buffed leather; leather cur-
tains and leather covered bow
sockets.

We would be pleased to
quote price and send catalogue
to dealers.

MANUFACTURED BY
THE YOUNGSTOWN GARRIAGE & WAGON CO., YOUNGSTOWN, OHIO.

Please mention "The Hub" when you write.



THREE-QUARTER SURREY, 22½ by 63 in., . . . \$9.00.
WE BUILD THE SAME IN CUT-UNDER.

BODIES

SURREY, TRAP, PHAETON BODIES.
AND BUGGY

PANEL, STICK AND
WICKER SEATS. * *

DELIVERY WAGONS BUILT TO YOUR
SPECIFICATIONS.

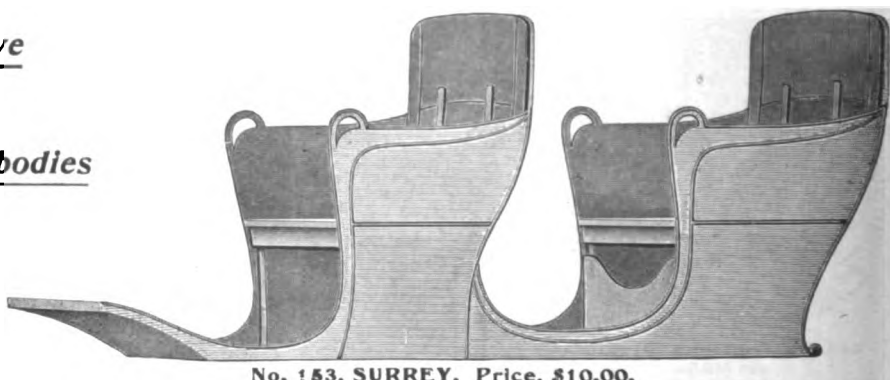
THE MILLCREEK WAGON CO., CINCINNATI, OHIO.

BODIES! BODIES! BODIES!

Many new and attractive
designs for 1900.

A choice lot of stylish bodies
always in stock.

REQUEST WILL BRING
CATALOGUE AND PRICES.



No. 153. SURREY. Price, \$10.00.

CINCINNATI PANEL CO., Cincinnati, Ohio.
63 BEAUTIFUL STYLES.

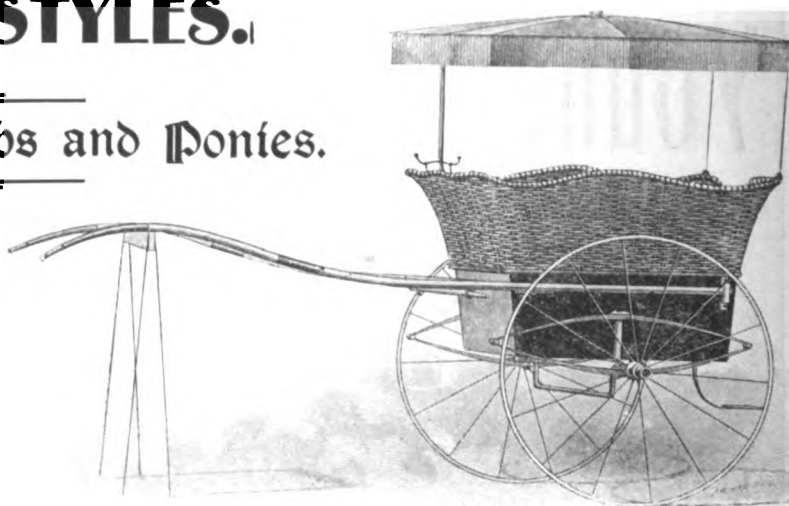
Swell "Rigs" for Swell Cobs and Ponies.

Send for new and beautifully illustrated cata-
logue No. 14 of up-to-date novelties and
quick-selling profit makers. * * *

Walborn & Riker,

PRIZE BUILDERS,

St. Paris, Ohio, U. S. A.



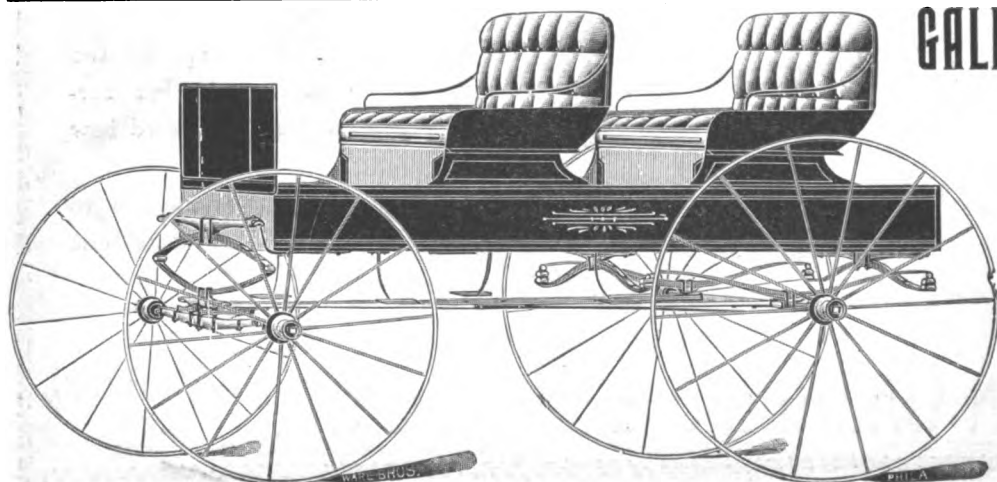
GALION WAGON & GEAR CO.

GALION, O.

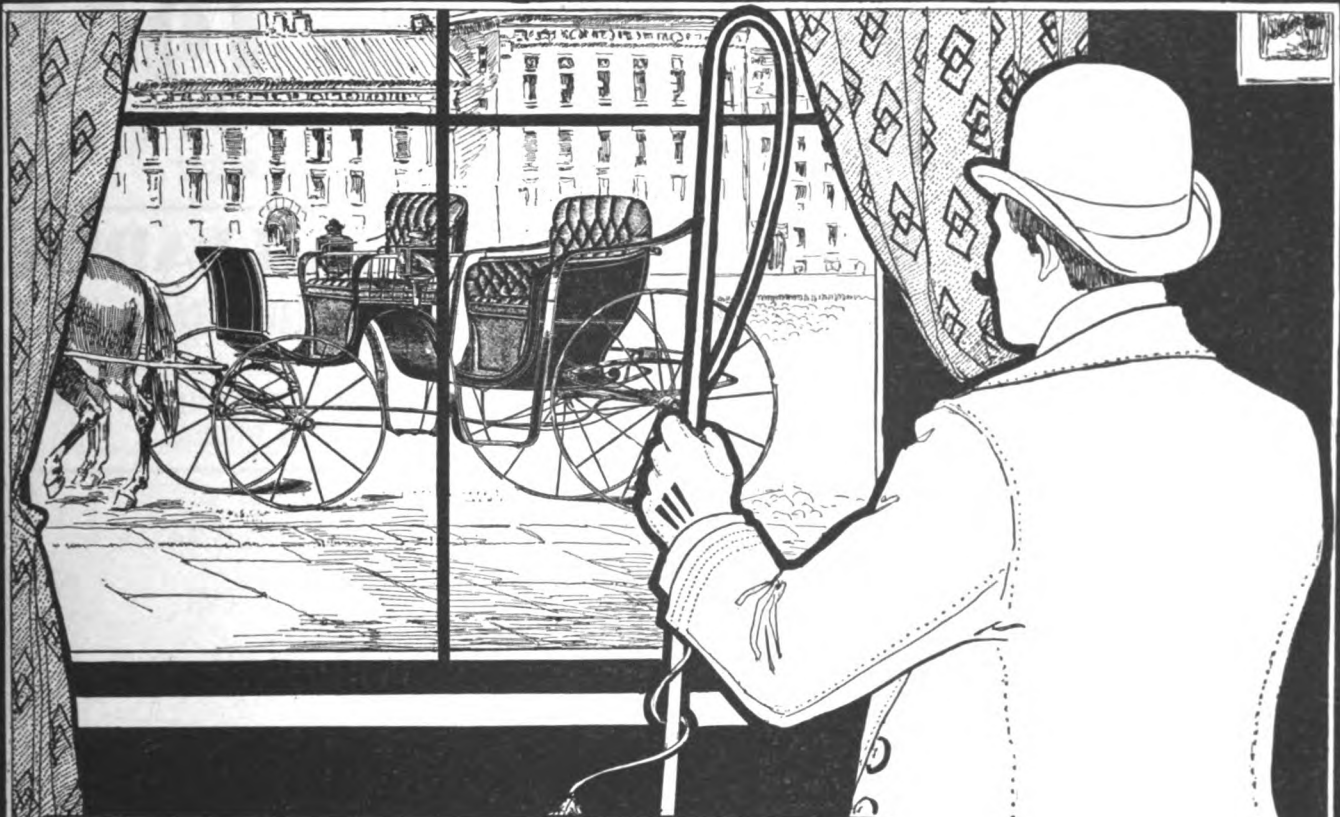
MOST COMPLETE
WAGON AND GEAR
FACTORY ON EARTH.



DID YOU
SEE OUR LINE AT
CINCINNATI?



Please mention "The Hub" when you write.



A Babcock Driver.

The driver of a Babcock carriage is a pleased driver—every time, no matter what the style of vehicle.

Perhaps you have made a profitable demonstration of this fact.

You can be reasonably sure of it, even though you never sold a Babcock job.

Babcock vehicles have been sold

More than long enough, we believe, to prove to an intelligent trade the practical merit of a line of these carriages.

If Babcock vehicles hadn't pleased the users they wouldn't have been made and sold for as many years as they have.

Of course not.

Then, why don't you get a Babcock catalogue and get some of the money?

H. H. BABCOCK COMPANY,

FINE CARRIAGE BUILDERS,

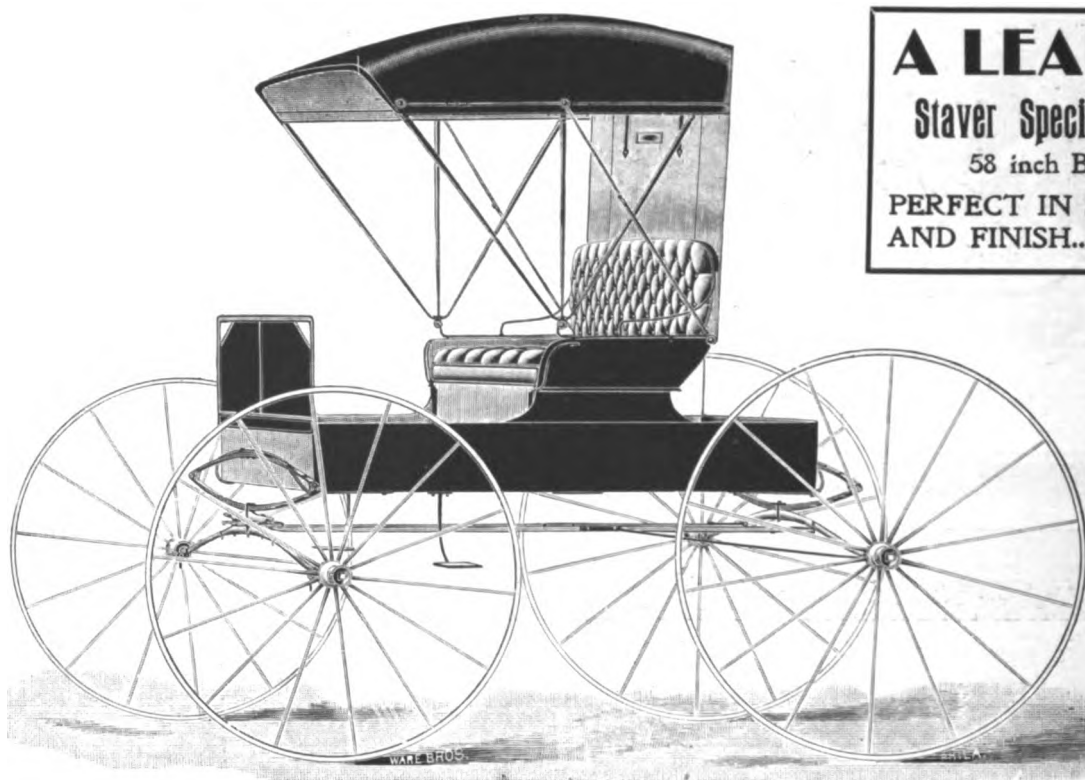


WATERTOWN,
N. Y. ❧ ❧ ❧

CHARLES AUSTIN BATES N. Y.

The Staver Line for 1901

Includes 80 styles **ALWAYS UP TO DATE.**
MANY FEATURES OF SPECIAL MERIT.



No. 90.

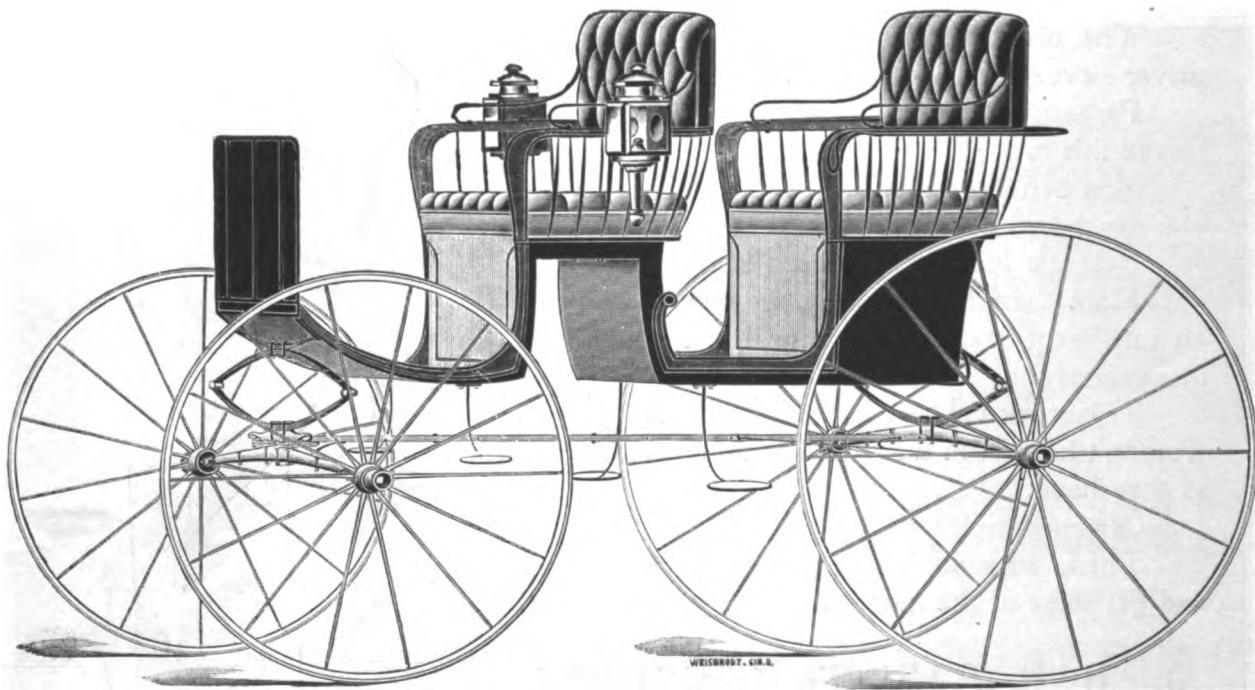
A LEADER

Staver Special Gear

58 inch Body

**PERFECT IN STYLE
AND FINISH....**

Send for Complete Catalogue and Trade Prices.



No. 565 Peerless Surrey.

Our "Peerless" Surreys are bright and attractive in style, roomy and comfortable. Light in draft.
 Made also as a Straight Sill Surrey, and with top canopy.

Staver Carriage Co., Chicago.

Please mention "The Hub" when you write.

The Sterling Buggy Company

**CORRECT
IN
PRINCIPLE**

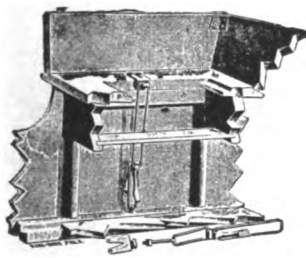


**ELEGANT
IN
APPEARANCE**

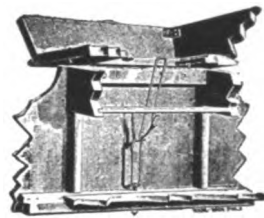
OUR No. 110 COMBINATION BUGGY

GENERAL DESCRIPTION

- GEAR** . . . Long distance axles, open head springs, second growth gear woods, full wrought iron gear irons.
- WHEELS** . . . B grade, compressed band or Sarven. Steel or rubber tire, full bolted
- BODY** None better made. Irons all wrought
- TRIMMINGS** . 14 ounce all wool Slater cloth, M B leather or whipcord. Spring cushion and back.
- TOP** Lambert patent, 3 or 4 bow, M B leather quarters, back stays and back curtain, 26 ounce rubber roof and side curtains.
- PAINTING** . . First class in every respect. Color, carmine, Brewster green or black.

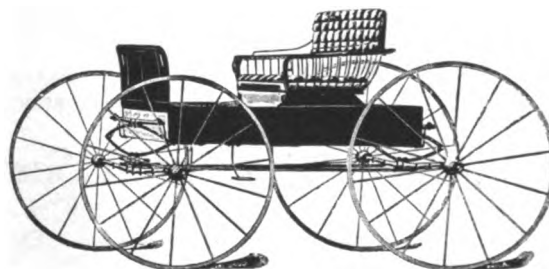


Shows Eccentric seat lock in position.
Also parts. Fastened direct to sill.
No screws or bolts to remove in changing.



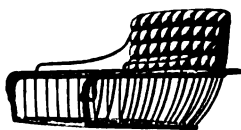
Shows seat after released, ready to be removed.
Notice how simple and how strong our fastening is.

**SEEING
IS
BELIEVING**



OUR No. 110 COMBINATION BUGGY

With top and seat removed and stick seat applied.
Change can be made in 15 seconds.



This seat is made to interchange with any and all our buggies from Nov 1, 1900
Trimmed in whipcord, leather or cloth.
Spring cushion and solid back

**ORDER
ONE AS
SAMPLE**



Shows buggy in 30 inch crate.
Saves you one-third the freight charges

Rushville, Indiana, U. S. A.



IT DOES ALL A FOUR-WHEELER WILL DO—AND MORE.

But it **CANNOT** be tipped over as a four-wheeler can. It is not a toy or a freak.

It has been used and tested by some of the most conservative drivers of the country, who pronounce it superior to any four-wheeler.

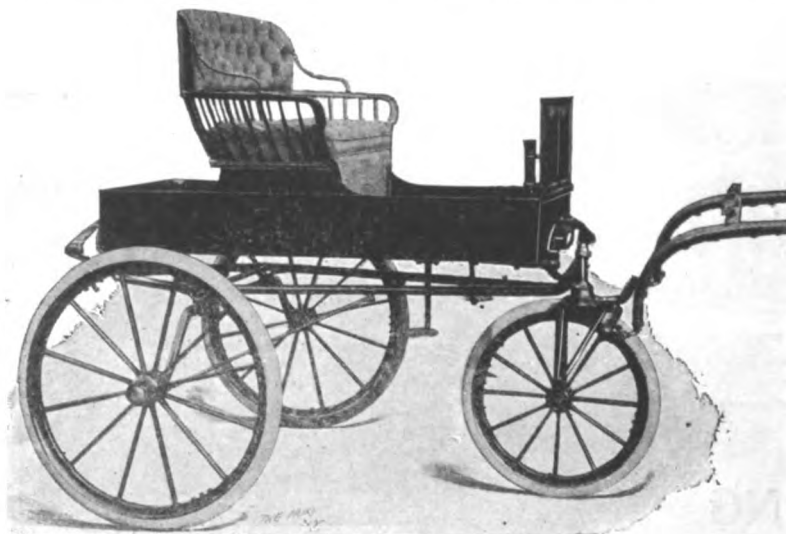


THE LENGERT WAGON CO.

INCORPORATED.
ESTABLISHED 1840.

Sole Manufacturers
THE BLOOMER SAFETY THREE WHEELER,

302-304-306 West 53d St., NEW YORK, U.S.A.



PATENTED IN UNITED STATES, CANADA AND EUROPE.

No. 9. Runabout Stick Seat.

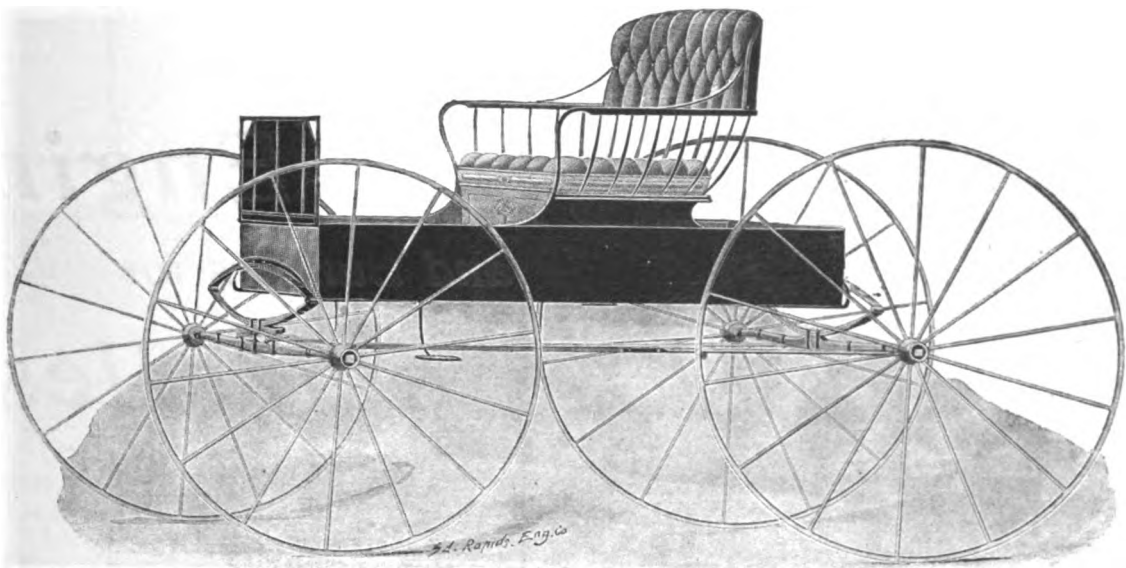
Suitable for general driving, and for jogging and exercising horses.

At Dealers' Exposition, Chicago, Jan. 28 to Feb. 2, 1901,



We shall display **THE BLOOMER SAFETY THREE-WHEELER**, and make demonstration of its adaptability and features. We desire every visitor to come and **RIDE** in it. Bring your **THINKER**—you'll see something to **SET** you thinking.





No. 11. RUNABOUT.



*Originality of Design.
Quality of Material.*

Manufacturers of

**Fine Surreys,
Carriages
and
Road Wagons.**

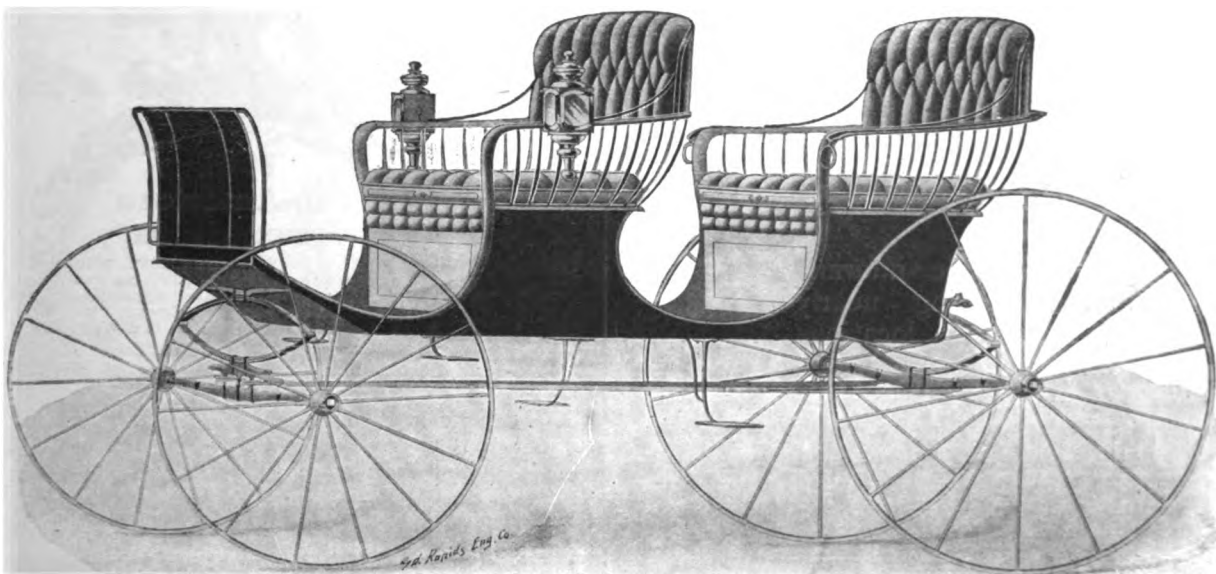
*Up-to-Date Finish.
Lowness of Price.*



**Western Amesbury
Line.**

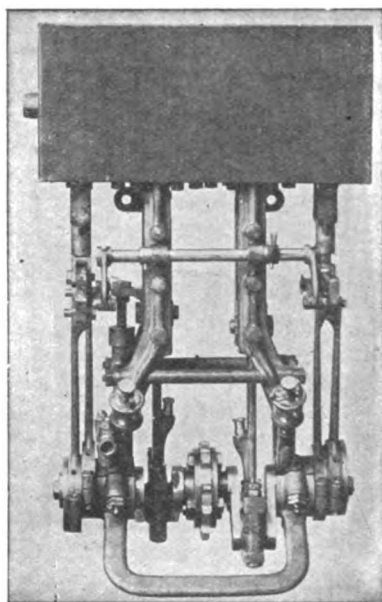
*A Pontiac will Satisfy
the Most Exacting
Buyer.*

**Pontiac Money
Makers.**



No. 108. PARK SURREY.

Please mention "The Hub" when you write.



Power is the life of the vehicle.
We have perfect power.

HIGHEST GRADE

Boilers, Engines and Burners for Automobiles

New and improved over any others
in use. The finest quality made
anywhere in the world.

Practical and durable machines
backed by many years of experience
in building light draft Steam En-
gines and Boilers.

Write for Particulars.

Rochester Cycle Mfg. Co. Rochester, N. Y.

OF INTEREST TO MANUFACTURERS

Write for a copy of pamphlet
just issued by the

**ILLINOIS CENTRAL R. R.
COMPANY**

giving reliable informa-
tion concerning nearly
200 desirable locations
for industries and entitled

**INDUSTRIAL SITES
IN TEN STATES**

Address **GEORGE O. POWER,**
Industrial Commissioner Illinois Central Railroad.
Room 904 Central Station, CHICAGO, ILL.

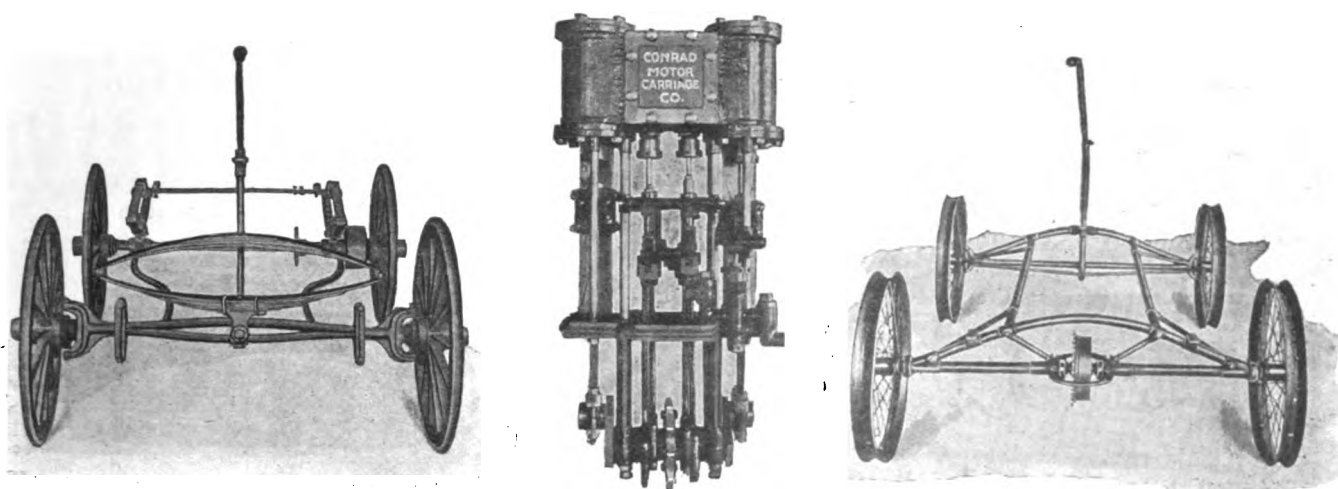
Big Four

The
'Buffalo
Route'

to



Please mention "The Hub" when you write.



AUTOMOBILE

Engines, Boilers, Running Gears, Differentials,
Running Gear Frame Fittings, Rough or Machined.

STEAM DELIVERY WAGONS.

STEAM STANHOPEES.  

STEAM RUNABOUTS.  

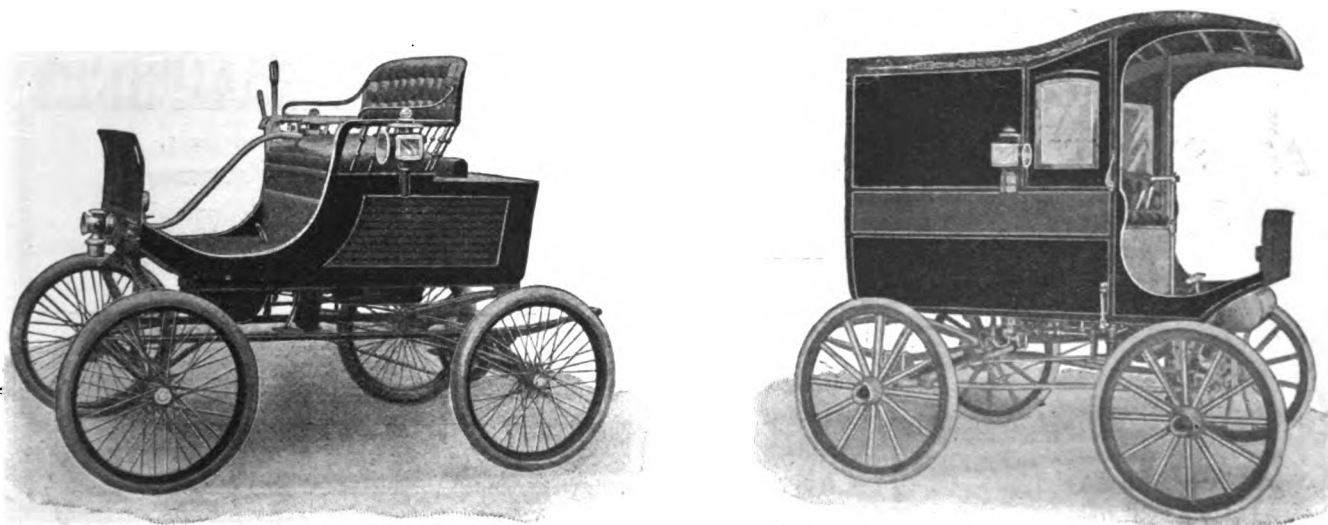
Carriage Builders, build your own Automobiles. We can furnish you the parts, together with blue prints, and all necessary data, for piping up and assembling your first jobs.

Our Steam Carriages are running successfully, and have all the latest improvements.
Catalogue on application.

THE CONRAD MOTOR CARRIAGE CO.,

DEWITT AND BRADLEY STREETS,

BUFFALO, N. Y.



Please mention "The Hub" when you write.

THE HERALD SQUARE Automobile Exchange,

147-157 West 35th St.,
NEW YORK.

Space offered and facilities provided
for storage and care.

Workrooms and offices at low rates.

Salesrooms.

Auto's Charged, Repaired, Stored,
Cleaned.

Supplies in stock.

INSPECTION SOLICITED.

AUTOMOBILE CAPS *For Ladies and Gentlemen....*



Chauffeur's Cap of Dull Finish Kid.

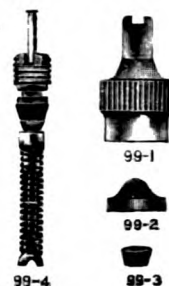
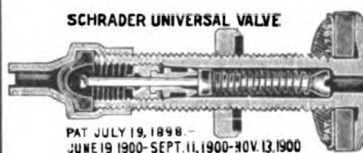
LATEST STYLES.
BEST OF MATERIAL.
COMPLETE LINE.

DEMME & CO.,

248 W. 23d St., New York City.

SCHRADER UNIVERSAL VALVE

Trade Mark Registered April 30, 1895.



NOTICE

Manufacturers, Jobbers and Dealers :

In order to facilitate the obtaining of
PARTS OF THE SCHRADER UNIVERSAL VALVE,

I have concluded to sell parts only to the general trade.
Parts 99-1, 99-2, 99-3, 99-4, may be had from all tiremakers,
or from A. SCHRADER'S SON.

Price-list of parts sent on application.

SIMPLE AND ABSOLUTELY AIR TIGHT.

MANUFACTURED BY

A. SCHRADER'S SON,

Established 1844.

30 and 32 Rose Street,

NEW YORK, U. S. A.

Automobile Gasoline Motors.

Also Motors for Bicycles
and Launches.

Castings and Working Drawings.



Bicycles.

Lowell Model Co.,

P. O. BOX 292,

Lowell, Mass.

CREST MANUFACTURING CO.

THE NAME "CREST" IS A GUARANTEE.



CAMBRIDGEPORT, MASS.

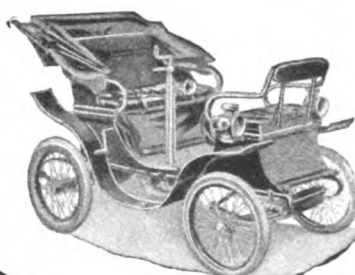
**CREST GASOLINE
MOTORS,
CREST
SPARKING PLUGS**



**EVERYTHING
FOR AN
AUTOMOBILE.**

Please mention "The Hub" when you write.

DE DION-BOUTON "Motorette" COMPANY


Sole Agents and Licensed Manufacturers in U. S. for DE DION, BOUTON & CO., Puteaux France.

THE "DE DION"

The Standard Automobile
Motor of the World

A DEMONSTRATED SUCCESS

MOTORS, MOTOR SUPPLIES
AND BATTERIES

In stock for immediate delivery.

TRICYCLES, QUADRICYCLES,
"MOTORETTES."

THE SIMPLEST

and best

HYDRO-CARBON SYSTEM

Over 20,000 motors in operation.

NEW YORK OFFICE
57 West 66th Street
New York, City

GENERAL OFFICES AND FACTORY
Church Lane and 37th Street, BROOKLYN, N. Y.

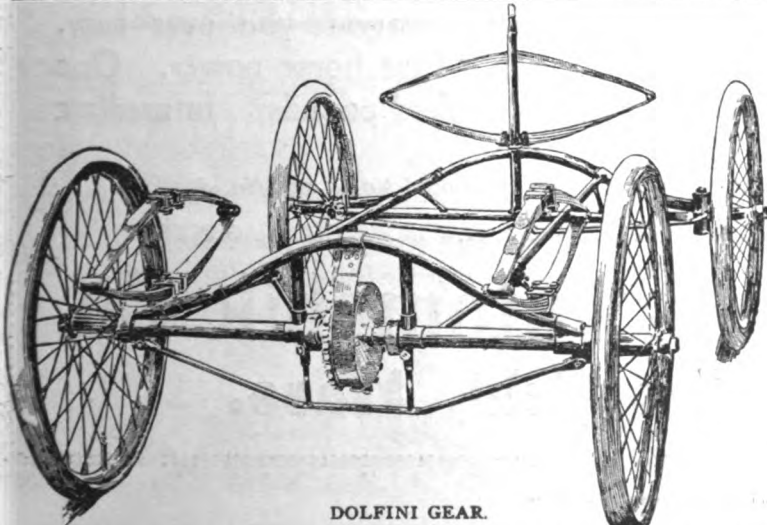
Send for
Complete Catalogue



OUR UP-TO-DATE
Surrey.

Will track ordinary County roads.
Gasoline tank holds 10 gallons, sufficient for 100 miles of travel, 12 to 18 mile speed.
Superb Hill climber.
Patent Pilot Light.
Forward and backward brakes.

Milwaukee Automobile Co.



Complete Running Gears and Fittings.

SPECIALLY ADAPTED TO THE USE OF
CARRIAGE MANUFACTURERS, IN GASOLINE,
STEAM OR ELECTRIC VEHICLES

ONLY ONE GRADE..... **THE BEST.**

...

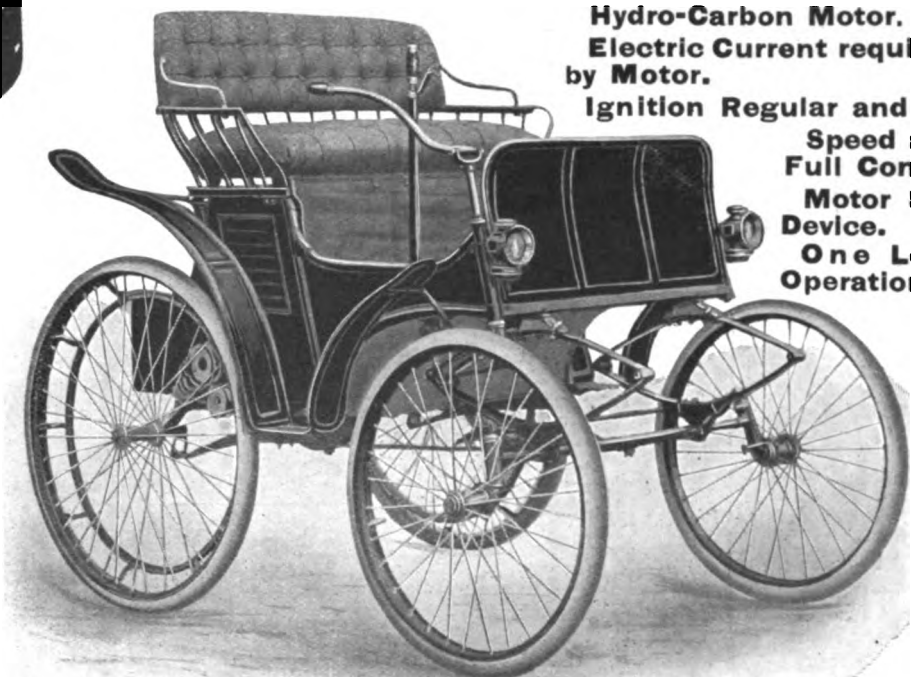
Brooklyn Automobile Supply Co.,

332 CLASSON AVENUE,
BROOKLYN, N. Y.

DOLFINI GEAR.

Please mention "The Hub" when you write.

OAKMAN MOTOR VEHICLE.



Hydro-Carbon Motor.
Electric Current required for Ignition provided
by Motor.

Ignition Regular and reliable.

Speed at Will of Operator and under
Full Control.

Motor Started from Seat by Simple
Device.

One Lever Controls every Required
Operation except Steering.

Cost of Operating Less
than One-Quarter Cent
per Mile.

Free from Odor.

Practically Noiseless.

Very Attractive.

Simple in Construction
and Durable.

Weight 475 Pounds.

Style No. 120.

AMERICAN VEHICLE CO., MANUFACTURERS.
45 BROADWAY, NEW YORK.



The Billings & Spencer Co., Hartford, Conn., U.S.A.
Established in 1869.

Manufacturers of
Drop Hammers, Presses, Forges, Machinists' Tools and Drop Forgings

of every description and for all purposes. The illustrations show
Automobile Forgings suitable for carriages weighing from 600 to 1500 lbs. which
we carry in stock.

We have ample facilities for the production of
Vehicle Forgings of every description.

Specifications will receive our prompt and careful attention.

Estimates made on finished parts.

LONDON OFFICE:

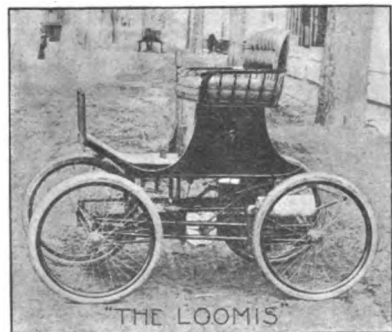
No. 8 Long Lane, Aldersgate St.,
LONDON, E. C., ENGLAND.

Steering Knuckle, 1-3 size.

DROP FORGED OF BEST SOFT STEEL
ORDERS PROMPTLY FILLED.



Front Axle
End,
1-3 size.



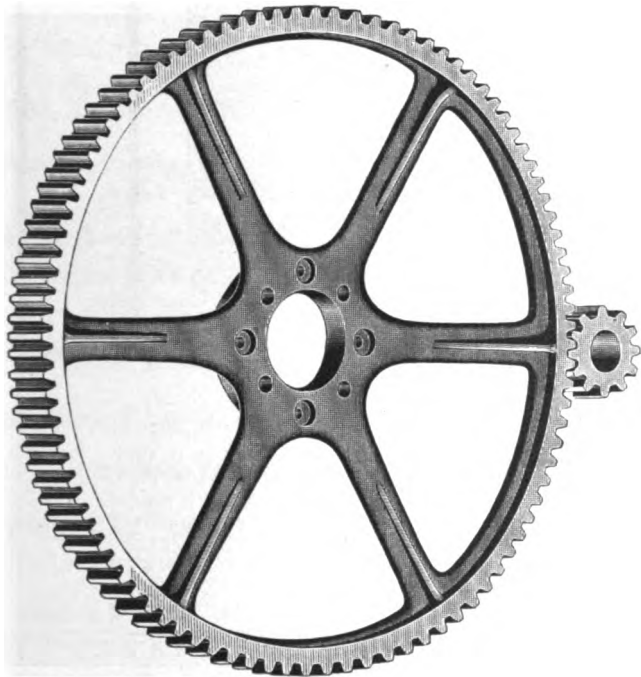
THE prettiest little park wagon you ever saw.
Weight, 520 pounds. Five horse power. One
one-horse power for every hundred pounds. Immediate
delivery.

Write for catalogues of model No. 2 and No. 3.

WE ARE LOOKING FOR A FEW MORE GOOD AGENTS.

Loomis Automobile Co.
Westfield, Mass.

Please mention "The Hub" when you write.



Theoretically Correct

Cut Bevel, Mitre, Spur and Internal Gears and Pinions for all classes of Automobile work.

We are thoroughly equipped for this style of gearing and can satisfy you in the way of prices and deliveries. Will quote from Blue Prints, Sketches or Specifications.

*R. D. Nuttall Company
Pittsburg, Pa.*

RAW HIDE GEARS

NOISELESS	+
DURABLE	+
CLEANLY	+
NO VIBRATION	+

Our gears are used for all kinds of geared machinery. They are especially adapted

FOR THE AUTOMOBILE SERVICE
and have been adopted by a majority of the leading concerns in this line. Write for our circular.

THE
New Process Raw Hide Co.
SYRACUSE, N. Y.



The Oldsmobile is a marvel to most people. It is only a simple fact, however. Runs 40 miles on one gallon gasoline. Starts at will from seat. Perfectly safe for child to operate. Fully guaranteed.

We have separate catalogues of our marine and stationary engines.

Olds Motor Works,
53 Concord Avenue,
DETROIT, MICH.



FACTORY OF THE MOBILE COMPANY OF AMERICA.—VIEW LOOKING SOUTH.

THE "MOBILE" A CARRIAGE FOR EVERY-DAY USE.

ON June 10th, four "Mobiles" started in the middle of the afternoon from the factory of The Mobile Company of America at Kingsland-Point-on-the-Hudson and ran to West Point, reaching the ferry at Garrisons in time for the 5:15 boat. Two hours and a half were spent in running about the Military Academy roads, then, after dinner, the four carriages started home by moonlight. The road from Kingsland Point to West Point is hilly, with many steep gradients scattered over its length; but from the State Camp at Peekskill through the Highlands of the Hudson to West Point occur long climbs and very steep and rough roads. The distance traveled was approximately, including the running at the Academy grounds, sixty-five miles. Not a delay or accident of any kind occurred; not a moment's worry to anyone of the eight people who made the journey. The "Mobiles" were in as good condition at the end as at the start—not one, but the entire four—and one of them had come up from New York to Kingsland Point before starting for West Point.

This gives an idea of what the "Mobile" is—a splendid piece of machinery, satisfactory in all its parts, of the best quality and workmanship throughout. Price, \$750. All visitors can inspect every department of the manufacture of "Mobiles." Twenty-five trains stop at Philipse Manor, the station on the company's grounds.

For information regarding "Mobiles" address

THE "MOBILE" COMPANY OF AMERICA,

PHILIPSE MANOR STATION, TARRYTOWN-ON-THE HUDSON, N. Y

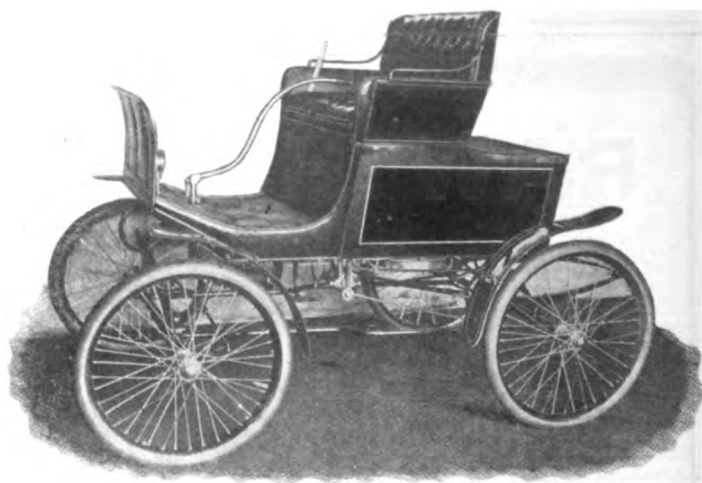
Did You

notice that during the past few months advertisers by their patronage have shown that they consider THE HUB the very best medium through which to reach the trade? You cannot help but

See It in

the same light, if you will watch results. Our advertisers are making money. We don't do it all, but we help them very materially and they appreciate it. Advertising is sometimes an expensive luxury, but it always pays well if placed in

The Hub



Grout Steam Wagons

Go up any hill, go fast, go easy.

Ride well, built well, look well.

We control fire from seat and do not connect to any supply, but simply light with match when first starting.

Main supply is not turned on until vaporizer is hot.

Can refer to many now running.

A perfectly safe wagon in every respect.

GROUT BROS.

make every part at

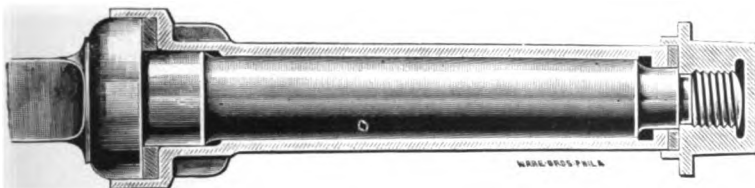
ORANGE, MASS.

Catalogue.

Please mention "The Hub" when you write.

Doctors' Special Axle.

*This is the finest Axle on the market
for light and medium weight Carriages.*



*In it there is more value for
the money than in any other
at any price. Full particu-
lars sent on application. ♣*

To it, when desired, we can at a small extra cost apply the Brewer Longitudinal Axle Lubricator, which is the simplest device known for continual lubrication, and has the added merit of not weakening either arm or box by the removal of metal at vital points and does not allow oil to leak out. ♣ ♣ ♣

Dalzell Axle Co., South Egremont,
Mass.



IN recognition of the importance of the industry established by The "Mobile" Company of America at Kingsland-Point-on-the-Hudson, the New York Central & Hudson River Railroad has established a station at the factory of The "Mobile" Company with a service of twenty-five trains a day.

The original Philipse Manor, two hundred and twenty years old, still stands on the company's property, and the railroad company has appropriately, in view of its historical and literary associations, given this name to the station. The run from the Grand Central Station in New York is one hour. The manor house and old mill and Sleepy Hollow are part of the company's property, connected by the Headless Horseman's Bridge. The old Dutch Church, and Washington Irving's grave and the monument marking the spot where André was captured, are in the immediate vicinity. When you visit New York, you will find a trip to the factory of

THE "MOBILE" COMPANY OF AMERICA

quite worth a half day's outing. Kingsland Point itself is considered to be the most beautiful section of the Hudson. The visitor is looked after by The "Mobile" Company's corps of demonstrators, taken for a ride in a horseless carriage, and shown all the different processes which enter into the fifteen departments required to manufacture a horseless carriage. He may inspect both quality of material and workmanship, see the new carriages tested as they are taken from the works one after another, and have every opportunity to satisfy himself of the excellence of the carriage in every particular. **Price, \$750 Complete.**

THE "MOBILE" COMPANY OF AMERICA, Philipse Manor Station, Tarrytown, N. Y.

Bailey

WHALEBONE WAGON WORTH

The ensemble and every little detail of the BAILEY PNEUMATIC WHALEBONE ROADWAGON show that on the part of the makers, S. R. Bailey & Co., Amesbury, Mass., U. S. A., nothing has been left undone to make them what they are, the essence of refined workmanship. Write to them.

Bailey Bull-Dog Shaft Eye

Signifies
Silence and
Safety

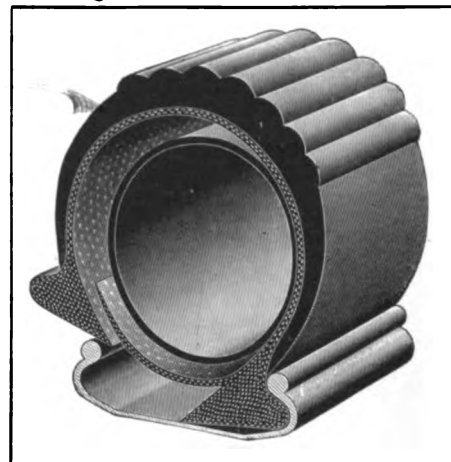
Remember, it's the

Bull-Dog

S. R. BAILEY & CO., Amesbury, Mass.

G & J TIRES

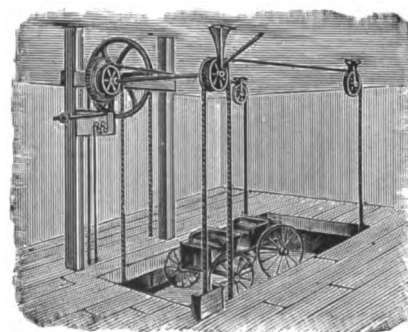
FOR AUTOMOBILES



*Are detachable,
double tube tires.
An occasional
puncture is inev-
itable in any tire.
Any one can
repair a G & J
Automobile Tire
easily and
permanently.*

G & J TIRE CO.

INDIANAPOLIS, IND.



Elevators,

Passenger and Freight
of every description.
Send for Circulars.

THE

Albro-Clem Elevator Co.

Main Office and Works:
700 Glenwood Ave.,
PHILADELPHIA.
Telephone Connection.

SPRING LIE!

Have You A Question to Ask?

We make no charge for giving information. If you are a manufacturer, have you all the latest improvements in your machinery? Do you wish to know the latest labor-saving devices in your line? A letter to us may save you thousands of dollars a year. Read the "BUSINESS AND PERSONAL WANT" COLUMNS OF THE

Scientific American

every week. You will find inquiries for all kinds of goods—there may be several in your line. These are from people who write us asking to be put in communication with manufacturers of goods they wish to buy. Refer to our "BUSINESS AND PERSONAL WANT" column weekly; it may add to your sales considerably. If you are not a manufacturer, perhaps you would like to know where you can buy some special tools, some improved machinery, some novelty—we will tell you—and charge you nothing for the service. Do not hesitate to write us. If you are not already a subscriber to the SCIENTIFIC AMERICAN, it will pay you to send us \$3.00 for one year's subscription. Address Inquiry Department of the SCIENTIFIC AMERICAN.

MUNN & CO., Publishers,
361 Broadway, New York City.

NAME PLATES

—FOR—

Automobiles, Bicycles and Carriages.

Steel stamps, letters and figures, the very best hand cut work at reasonable prices.

SEND US A TRIAL ORDER.

WE GUARANTEE SATISFACTION.

Our letters and figures are of new pattern (sec cut), are heavy and strong, and will outlast three of the regular sets. . . .

The CHANDLER CO.,
SPRINGFIELD, MASS.

This is pretty strong language, but we leave it to you—are we not justified in using it under these circumstances?

An imitation of our Bailey Pivot Spring is being foisted on dealers, our Imitators describing it as the "Bailey Spring," "Bailey Head Spring," etc. These Imitations lack those vital qualities of the Bailey Pivot Spring, which, being so nearly perfect, has thoroughly met all requirements. Our Imitators are describing them as "Bailey's" this, that, and the other, for no other purpose than to trade on our name and reputation. When they so describe them, they tell an untruth—a lie. They are not "Bailey's." The only *Bailey Spring* is the

BAILEY PIVOT SPRING

which we are now preparing for the Fall trade.

This *spring* varies principally from ordinary construction in that there is no bolt in the head. We found by our experiments that the friction in the eye or head of the spring interfered very seriously with the quick and easy action. This friction is around the bolt and from nuts set up too tightly making friction against the edges of the plates. (Any ordinary elliptic spring can be almost entirely stopped in its action by tightening the nuts.)

We hold the springs together by a cylindrical shaped casing on the ends. The main leaves of the upper and lower spring simply roll upon each other with almost no friction. This spring, which will carry three men when driving, can be moved with the tips of the fingers.

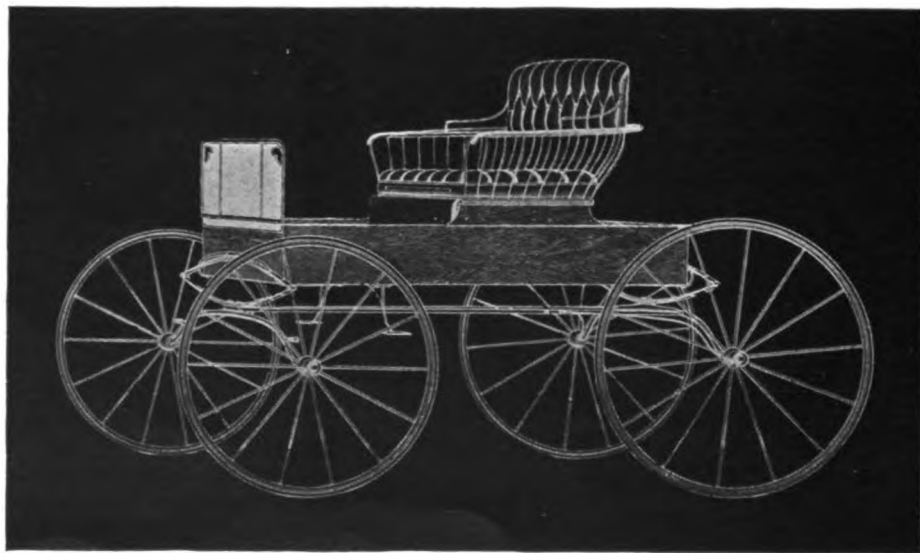
S. R. BAILEY & CO.

AMESBURY, MASS., U. S. A.

**IF YOU ARE
IN THE DARK**

**AS TO THE MOST PROFITABLE
VEHICLE TO HANDLE
TRY**

**BUFFALO BIKES
IN THE WHITE**



THE Buffalo Spring & Gear Co.

BUFFALO, N. Y.

Please mention "The Hub" when you write.

The Hub

(THE HUB NEWS.)

Copyright, 1901, by The Trade News Publishing Co., of N. Y.

Entered at the New York Post Office as Second Class matter.

VOL. XLIII.

NEW YORK, APRIL, 1901.

No. 1.

Publishers :

TRADE NEWS PUBLISHING CO. OF N. Y.

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THE HUB is published monthly in the interests of employers and workmen connected with the manufacture of Carriages, Wagons, Sleighs, Automobiles and the Accessory trades, and also to the interests of Dealers.

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FOREIGN REPRESENTATIVES.

ENGLAND.—R. Applegarth, 11 Queen Victoria street, London, England. Subscription price, 12s. 6d., or \$3.00.

FRANCE.—L. Dupont, publisher of *Le Guide du Carrossier*, 135 Boulevard Haussmann, Paris. Subscription price, 15 francs, postpaid.

GERMANY.—Gustave Miesen, Bonn a. Rh.; H. & T. Hampe & Co., 64 Alteswall, Hamburg. Subscription price, 12 marks, postpaid.

AUSTRALIA.—Henry Box & Son, 442 Little Collins street, Melbourne, Victoria. Subscription price, \$3.00 in advance.

Bankruptcy and Careless Credits.

THE details which we publish on another page regarding the bankruptcy of a carriage dealer is suggestive of a laxity on the part of carriage builders in giving credits and discreditable to the bankrupt, but this is only a small matter as compared with the damage such a procedure may do to the honest dealer. If a dealer can buy carriages to the value of nearly \$30,000 on paying the paltry sum of \$282 and then be allowed to escape payment by being adjudged a bankrupt, he can bankrupt his neighborhood competitor by selling the bankrupt stock, directly or indirectly, at prices below the best rates that the builder can offer. Dealers complain much about manufacturers selling to men who are not entitled to dealers' discounts and direct to consumers, but the damage to the honest dealer in these sales is small as compared with the reckless selling to irresponsible men who may be able to scrape up a few hundred dollars as a basis for credit and

then procure thousands of dollars credit and thereby stock up, far beyond their ability to dispose of at a fair profit, and as selling day approaches dispose of the stock at ruinous prices, thus causing loss to the manufacturer and making it impossible for an honest dealer to dispose of his stock except at a loss. Credits must be granted, but the granter of those credits fails in his duty to himself and his creditors if he does not closely scan the financial condition of men to whom credits are given. No honest dealer is injured by the manufacturer protecting himself by learning the financial ability and the reputation of such dealer, and the manufacturer by so doing performs his duty alike to himself, the dealer and other manufacturers. Dealers' associations can protect their members quite as much by assisting manufacturers to guard against dishonest dealers as by their present action in protecting dealers against manufacturers.



What About Your Repository?

THERE are few industries that appeal so strongly to the great majority of people of education and refinement as does the products of the carriage factory. The simplest carriage is worthy of notice as a mechanical product, while the elegant Victoria, cabriolet, landau, coach, brougham and high class phaetons are representatives of the highest mechanical skill, and evidences of a high order of art, and speak more strongly of the marked advance of civilization than do any other article of universal use. The well arranged carriage repository stored with a variety of vehicles is a veritable museum, and the dealer who fails to show his goods to an advantage lacks in one essential requisite to success. It is not always possible to locate a repository in a way to secure the full advantage of a northern light, which is so desirable, as under this light the colors show their true tones and strength; neither is it always possible to have a repository sufficiently large to carry a full stock without crowding, a condition that is to be condemned, as it is impossible to show vehicles properly or to keep them in good condition if they are so crowded together as to require to be moved in order to get around them; and yet this is the existing condition of a great majority of the repositories of the country. An occasional manufacturer and a few dealers arrange their exhibits so as to show them to the best advantage, having good light and ventilation and ample space for the number of vehicles shown, but the great majority seem to be careless as to surroundings. The rooms are dark and illy ventilated, besides being crowded so that it is impossible to get around among the vehicles without moving each as it is reached. It is not only impossible to show carriages to a good advantage when thus situated, but it is also injurious to the vehicle

to keep them thus crowded, as ventilation is impossible and the dust and moisture combine to destroy the lustre of the varnish and to soil the trimmings. Carriages kept under such conditions show more injury to leather, cloth and varnish in three months (particularly in summer) than those do that are properly cared for will in one year, and many of the complaints made by dealers regarding the appearance of their carriages are due to ravages of a badly ventilated, lighted, and crowded wareroom. It is far better to show his carriages and to show them to an advantage than to attempt to show a large stock where conditions are unfavorable. The man who has an attractive repository starts with a 50 per cent. advantage over his less careful competitor.



New Designs for Carriages.

ON another page is published the advertisement of a prominent carriage manufacturing firm, in which they make a liberal offer to carriage draughtsmen for three new and acceptable designs. This is in line with what THE HUB has been urging for a year or more to an extent to attract attention of the foreign and home trades, and we trust the offer made by the firm referred to will lead to good results. No man who knows the carriage trade will expect absolutely new designs, but he will have reason to look for new combinations of lines. A correspondent voices our position when he says: "The demand of dealers in carriages is for something new and novel in design, that will represent a departure from the old and established styles, and, to a considerable extent, introduce a new fashion in vehicles that will attract the attention of buyers very much as a new fashion in wearing apparel leads to the discarding of last year's clothing because it is out of date. There are many people of various tastes and large means who would gladly exchange their entire line of vehicles if something of more modern construction were offered, not because the vehicles previously in use were worn or unserviceable, but because they did not represent the latest novelties and consequently the most 'fashionable' styles. To such people the dealer could appeal by inviting them to call and see the most pleasing and up-to-date vehicle offered for sale. Very much as a dealer in horses would invite a lover of horseflesh to call and see a horse that could not fail to attract attention. In fact, the first question asked of a manufacturer and traveling salesman by dealers in carriages is, 'What have you that is new?' And the catalogue is scanned by discriminating purchasers with a view to the selection of novelties. The leaves are rapidly turned over until something quite different from the stereotyped styles arrest attention." There are ample opportunities for bringing out new styles to the man of taste, but none to him who sees nothing new except in freaks, and while THE HUB will do its best to encourage new designs, it invites practical draughtsmen who are in the workshop to strive for the award offered and thus contribute their part to the advancement of the carriage industry.



A Word to Wheel Manufacturers.

THE improvements being made along the line of carriage construction all point to greater accuracy and to the necessity of increased care. It may be difficult for different manufacturers to duplicate each other's product in dimension and general proportions, but we are approaching the time when such a condition may exist, and it is well to begin

preparations for it; but whether it will become general or not, we have already reached a point where there must be a change in wheels, greater accuracy being required in the matter of circumference of the rims. This is now a necessity owing to the manufacture of rubber tires without joints, the tires being molded to a given diameter. Manufacturers of these tires have been investigating the circumference of rims of high grade wheels and have found differences ranging from $\frac{1}{8}$ to $\frac{3}{8}$ of an inch in diameter, thus seriously interfering with the application of these molded tires. Why this difference should exist is hard to understand, but we do not believe it will be difficult to remedy. We will not attempt to provide a way for overcoming this trouble, but we call the attention of wheel manufacturers to the subject, as the use of molded tires is on the increase, and there is every reason to believe that the time is near at hand when a great proportion of the fine grade wheels will be provided with these tires.



Have You an Inventory?

IF the decisions made by the courts hold good, the absence of an inventory makes it impossible to collect the insurance on the goods destroyed or damaged by fire. This necessitates greater care than has been given in the taking of and keeping a copy of the inventory. In some lines the inventories will have to be taken oftener than once a year unless it is possible to affix a transcript of purchases to the inventory. This action of the courts adds to the importance of an inventory. We have always held that the financial credit of a man should be gauged in a great measure by taking a careful inventory of the stock on hand, as a man who is too careless to take an account of his stock is likely to be one who would be careless in other respects, and creditors would suffer because of his not covering his stock on hand with an insurance policy that would protect them against loss.



Death of ex-President Harrison.

The death of Ex-President Harrison on March 13 caused universal sorrow; political opponents as well as personal joined in sympathy. Ex-President Harrison retired to private life after his term as chief executive of the nation expired, but not to a life of indolence. He immediately returned to his law practice and won additional fame in his chosen vocation. His birth, life and death emphasized the position of an American citizen, he working his way from the farm to the presidency of this great nation and retiring therefrom to assume the position of a citizen, leaving no successor by right of birth, and having no claims for recognition except those made as an executive officer and an American citizen. His death once more leaves the nation with but one living ex-President.



The St. Louis Exposition.

By the appropriation of \$5,000,000 Congress has made sure the St. Louis, or rather the Louisiana, purchase exposition, to be held in that city in 1903, in commemoration of the one hundredth anniversary of that event. It is estimated that \$15,000,000 will be required, and with one-third donated by the general government, there seems to be no good reason for doubting the successful launching of the exposition.

TANDEM.

TANDEM driving met with little favor in this country until 1866, when Burton Mansfield imported a tandem cart from England. Mr. Mansfield was an expert both in driving and fitting out the tandem, and it was not long before a goodly number of New York horsemen entered into the sport. The first tandem club was formed in 1886, but while there are a number of tandem enthusiasts, clubs have not flourished. Our illustrations this month in "Latest Styles" show four tandems, with carts and harness of leading patterns.

BROOKLYN'S HORSE SHOW.

PRIZES for harness and saddle horses of thirty-six classes are listed in the prospectus of the Brooklyn Horse Show, which has just been issued. The Riding and Driving Club, under whose auspices the exhibition is to be held, on April 25, 26 and 27, has this year opened sixteen of the show ring competitions to the entries of non-members, the other twenty classes being exclusively for amateurs who belong to the organization.

The open classes include two competitions for light harness road horses of the Speedway type; two for high stepping park horses in single and double harness; others for tandems, four-in-hand park teams, saddle horses and jumpers. The prizes range in value from \$50 to \$100. In the division of the show for club members' horses the twenty classes are evenly divided between the harness horses and the saddle horses.

The several divisions of the exhibition will be in charge of the following sub-committees:

Roadsters—F. H. Bedford, George V. Brower and E. H. Barnes.

Carriage Horses—Hamilton H. Salmon, C. F. Hubbs, J. Robinson Beard, F. D. Peabody and Charles A. Moore.

Horses, Carriages and Appointments—Howard Maxwell, Frank Bailey, F. H. Bedford and G. H. Potter.

Four-in-Hands and Tandems—J. Robinson Beard, W. L. Candee and Hamilton H. Salmon.

Saddle Horses and Jumpers—Robins B. Woodward, Frank A. Dingee, William A. Jamison, Allan Pinkerton, George H. Coutts, Henry Claus, W. G. Gilmore and J. F. Stillman.

A NEW ALLOY IN GERMANY.

CONSUL ALBERT writes from Brunswick in regard to magnalium, a new alloy of aluminum and magnesium, with a percentage of from 2 to 30 per cent. of the latter metal. Magnalium, it seems, is free from the bad qualities of aluminum, while it retains its light weight, firmness, and tenacity. It is especially applicable in the automobile industry, in electro-technics, aeronautics, and dentistry. It can be worked with the file, lathe, and planing machine; it is also admirable as a solder, and its pliability adapts it as a border for lenses and eyeglasses. Magnalium is absolutely waterproof and does not rust.

NON-INFLAMMABLE RUBBER TUBING.

CONSUL HUGHES, of Coburg, Germany, reports that Müller & Korte, of Pankow, near Berlin, have brought out a new kind of rubber tubing, to be used in cases where damage to the rubber is to be feared either from the flame itself or by contact with hot dishes or stands. The rubber tube is sheathed with asbestos and the asbestos coated with incombustible paint, lest the fibers should peel off. The tubing remains pliable and can be cut as before. Burners with such rubber tubes may be placed on sand baths or hot stoves. The protection is, of course, not absolute; for when the heat becomes too strong the rubber inside will give way. The well-known pipes with metallic spirals were originally made with the same object, but they have found other useful applications, and they differ from these new tubes by being hard and inclined to break; once leaky, they cannot be mended.

NEVER take great hazards, for they are seldom well balanced by the prospects of profit.

Description of Latest Styles.

PONY TRAP.

Scale, ½ in. to the ft.

(See Fashion Plate No. 500.)

A NEAT and serviceable vehicle for summer use is shown by Fashion Plate No. 500. This class of trap took rank among the most fashionable of last year's summer carriages at the summer and seaside resorts, and from present appearances the wicker work, which is a pronounced feature of this vehicle, is likely to be even more popular during the coming summer. The body is made perfectly plain and is finished with a thin, flat molding along the bottom and ends. The tailboard is hinged to answer for a footboard. The gear is a plain three spring perch, the coach axle being used in the rear.

Dimensions of Woodwork.—Body, width across top, outside, 27 in.; across bottom, 26 in. Width of seat across top, outside, 38 in.; across bottom, 32 in. Wheels, wood hub. Height, front, 32 in.; rear, 40 in. Hubs, length, 6 in.; diameter at center, 3½ and 3¾ in.; front end, 2½ and 2¾ in.; back end, 2⅞ and 3⅞ in. Size of spokes, 1 3-16 in. Number of spokes, 10 and 12. Stagger, ¾ in. Depth of rims, 1 3-16 in. Tread of rims, 1 1-16 in. Depth of bands, front, 2¼ in.; back, ¾ in. Distance between center of axles, 50 in.

Dimensions of Ironwork.—Springs, front, 32 in. long between centers of heads, with 6½ in. opening on main leaf. Width of steel, 1¼ in. Number of plates, 5. Thickness, main, No. 3, others, No. 4 steel. Back, 32 in. long, with 6 in. opening on main leaf. Width of steel, 1¼ in. Number of plates, 4. Thickness, main, No. 3, rest, No. 4. Axles, 1½ in. Tires, 1½ in. by 3-16 in. Fifth wheel, 12 in. diameter. Track, outside, 4 ft. 4 in.

Painting.—Black; wicker work in natural color. Gear, black, striped with a ⅛ in. line of cream color. Trimming, gray Bedford cord, "wide"; backs made in double roll; dickey seat, plain and cushions in blocks. Finish, lamps, black.

LADIES' SPIDER.

Scale, ½ in. to the ft.

(See Fashion Plate No. 501.)

FASHION PLATE NO. 501 illustrates a style of spider phaeton that met with favor last summer at the seaside and inland resorts. The lines differ somewhat from those of last year, but not enough to change the character of the carriage. The deep wicker seat gives a light appearance and at the same time is in the fashionable drift. The body is perfectly plain and simple in its construction. The three spring perch gear reduces cost and gives a plain, durable appearance.

Dimensions of Woodwork.—Body, width across top, 31 in.; across bottom, 29 in. Width of seat across top, 41 in.; across bottom, 36 in. Wheels, wood hub. Height, front, 35 in.; rear, 42 in. Hubs, length, 6½ in.; diameter at center 4¼ in.; front end, 3 in.; back end, 3¼ in. Size of spokes, 1¾ in. Number of spokes, 12 and 14. Stagger, ¾ in. Depth of rims, 1 5-16 in. Tread of rims, 1¼ in. Depth of bands, front, 2½ in.; back, ⅞ in. Distance between center of axles, 48 in.

Dimensions of Ironwork.—Springs, front, 36 in. long between centers of heads, with 7½ in. opening on main leaf. Width of steel, 1¾ in. Number of plates, 4. Thickness, No. 3; rest, No. 4 steel. Back, 38 in. long, with 7 in. opening on main leaf. Width of steel, 1¾ in. Number of plates, 4. Thickness, No. 3; rest, No. 4 steel. Axles, 1¼ in. Tires, 1¼ in., solid rubber. Fifth wheel, 14 in. diameter. Track, outside, 4 ft. 8 in.

Painting.—Body, black; seat, brown. Gear, black, striped with olive green. Trimming, light brown cord; back and cushions squabbed; dickey seats, plain.

*SIX PASSENGER WAGONETTE.*Scale, $\frac{1}{2}$ in. to the ft.

(See Fashion Plate No. 502.)

THE wagonette is at all times a desirable summer vehicle and one that dealers can handle to an advantage. The body is hung on a heavy runabout gear, with an additional elliptic spring at the back, insuring riding qualities when carrying a full load.

Dimensions of Woodwork.—Body, width across outside at front seat, 30 in.; at rear of body, top, outside, 38 in.; at bottom, 31 in. Width of front seat across top, outside, 40 in.; across bottom, 36 in. Distance between two seats for passage, 18 in. Wheels, wood hub. Height, front, 41 in.; rear, 45 in. Hubs, length, $6\frac{1}{2}$ in.; diameter at center $4\frac{1}{4}$ and $4\frac{1}{2}$ in.; front end, 3 and $3\frac{1}{4}$ in.; back end, $3\frac{1}{4}$ and $3\frac{1}{2}$ in. Size of spokes, $1\frac{1}{4}$ and $1\frac{3}{8}$ in. Number of spokes, 14 and 14. Stagger, $\frac{1}{2}$ in. Depth of rims, $1\frac{3}{8}$ in. Tread of rims, 1 3-16 in. Depth of bands, front, $2\frac{1}{2}$ in.; back, $\frac{7}{8}$ in. Distance between center of axles, 60 in.

Dimensions of Ironwork.—Springs, front, cross, 34 in. long between centers of heads, with $2\frac{1}{4}$ in. opening on main leaf. Width of steel, $1\frac{3}{8}$ in. Number of plates, 4. Thickness, No. 4 steel. Rear cross, 34 in. long, with $2\frac{1}{2}$ in. opening on main leaf. Number of plates, 4. Thickness, No. 4 steel. Elliptic, 30 in. long, with 6 in. opening on main leaf. Width of steel, $1\frac{3}{8}$ in. Number of plates, 3. Thickness, Nos. 3, 4, 4 steel. Axles, $1\frac{1}{4}$ in. Tires, $1\frac{1}{4}$ in. by 5-16 in., steel. Fifth wheel, 14 in. diameter. Track, outside, 4 ft. 8 in.

Painting.—Body, black; imitation lattice work, olive green. Gear, olive green, striped black. Trimming, gray cord; backs and cushions squabbed.

*OPERA BUS.*Scale, $\frac{1}{2}$ in. to the ft.

(See Fashion Plate No. 503.)

THE opera bus grows more popular each year and finds a market in cities and localities where summer travel is great, and for family use as a depot or race meet vehicle. The heavy coach boot shown tends to give distinctive character to the vehicle. The roof seat makes it possible to carry extra outside passengers or for outside riding in pleasant weather. The roof is fitted up with slats and rails to provide for carrying baggage. The vehicle is heavy and commodious, and when finished up as a private bus it is at once showy and comfortable.

Dimensions of Woodwork.—Width across top, 58 in.; across bottom, 54 in. Width of front seat, 40 in. Width of door, 22 in. Width across front of boot, 36 in. Wheels, wood hub. Height, front, 36 in.; rear, 46 in. Hubs, length, $7\frac{1}{2}$ in.; diameter at center, 6 and $6\frac{1}{2}$ in.; front end 4 and $4\frac{1}{2}$ in.; back end $4\frac{1}{2}$ and 5 in. Size of spokes, $1\frac{3}{8}$ and $1\frac{3}{4}$ in. Number of spokes, 12 and 14. Stagger, $\frac{1}{2}$ in. Depth of rims, $1\frac{3}{4}$ and $1\frac{7}{8}$ in. Tread of rims, $1\frac{3}{4}$ in. Depth of bands, front, $3\frac{1}{2}$ in.; back, 1 in. Distance between center of axles, 61 in.

Dimensions of Ironwork.—Springs, front, 40 in. long between centers of heads, with $7\frac{1}{2}$ in. opening on main leaf. Width of steel, $1\frac{3}{4}$ in. Number of plates, 6. Thickness, Nos. 2, 3, 3, 3, 4, 4 steel. Back, 44 in. long, with 2 in. opening on main leaf. Width of steel, $1\frac{7}{8}$ in. Number of plates, 7. Thickness, Nos. 2, 2, 3, 3, 4, 4, 4 steel. Back cross, 46 in. long. Number of plates, 7. Thickness, 2, 2, 3, 3, 4, 4, 4 steel. Axles, front, $1\frac{3}{4}$ in.; rear, $1\frac{7}{8}$ in. Tires, $1\frac{7}{8}$ in. Fifth wheel, 20 in. diameter. Kingbolt, $3\frac{1}{2}$ in. forward of center. Track, outside, front, 4 ft. 8 in.; rear, 5 ft. 8 in.

Painting.—Main body and door panels, dark green; seat risers, footboard, boot rockers and lattice work, coaching red; remainder of body, black. Gear, coaching red, striped black. Trimming, the outside seat may be trimmed in leather; green or light colored cloth for the inside. Finish, rails, lamps, etc., black.

CHARETTE.

(See "Latest Styles.")

PLATE CXX. illustrates a somewhat unique vehicle exhibited at the Paris Exposition by the French house of Raguin. American builders may be able to draw suggestions from it of value to themselves.

CHARETTE TANDEM.

(See "Latest Styles.")

PLATE CXXI. shows a tandem exhibited at the Paris Exposition by Windover & Co., of London. We look upon it as one of the most attractive tandem carts we have seen.

MANHATTAN SURREY.

(See "Latest Styles.")

PLATE CXXII. illustrates a seasonable vehicle built by the Waterloo Wagon Co., of Waterloo, N. Y. The canopy top makes it a comfortable summer carriage, and as this is provided with curtains, can be so attached as to prevent rain beating in, it becomes a specially comfortable and attractive job.

SKELETON CART.

(See "Latest Styles.")

PLATE CXXIII. shows a skeleton cart with a hamper. A noticeable feature is the bracket toe board in place of a dash. This vehicle, while not really intended for ladies, was used by them to a considerable extent last year.

IRISH JAUNTING CAR.

(See "Latest Styles.")

PLATE CXXIV. The introduction of the "jaunting car" was one of the whims of last season. The one shown was used at Newport by members of the fashionable set.

PNEUMATIC RUNABOUT.

(See "Latest Styles.")

PLATE CXXV. shows a complete turnout—one that won the ribbon at one of the horse shows last summer. While there is no real novelty in connection with it, it serves to show how such a turnout is fitted up.

TANDEM OF JOHN H. SCHULTZ, JR.

(See "Latest Styles.")

PLATE CXXVI. illustrates a Whitechapel cart and a tandem team, the leader being in breast collar. J. H. Schultz, Jr., driving, accompanied by Burton Mansfield.

TANDEM AND WHITECHAPEL CART.

(See "Latest Styles.")

PLATE CXXVII. Burton Mansfield driving tandem team before the original Whitechapel cart imported by him in the year 1866.

TANDEM AND "GOING-TO-COVER" CART.

(See "Latest Styles.")

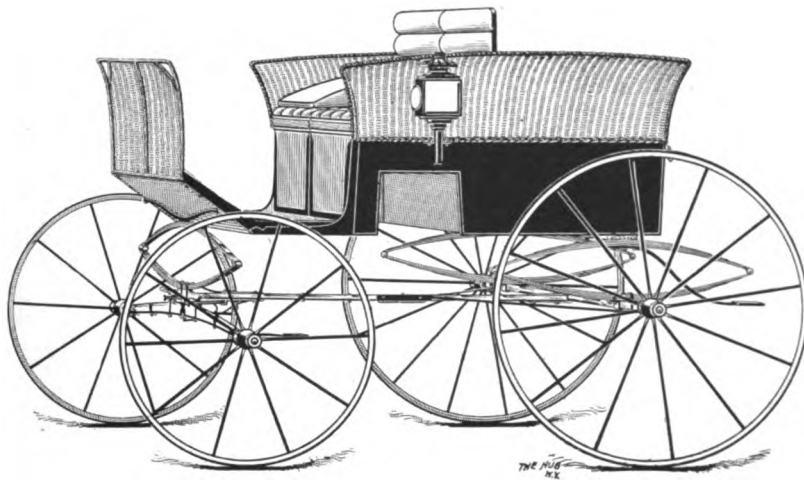
PLATE CXXVIII. shows a popular style of tandem cart, designated the "Going-to-cover," driven by Francis D. Beard.

AMERICAN TANDEM AND CART ABROAD.

(See "Latest Styles.")

PLATE CXXIX. illustrates the American team and cart owned by G. F. McCandless. The team won the blue ribbon prize at the first National Horse Show in New York.

Latest Styles. April, 1901.

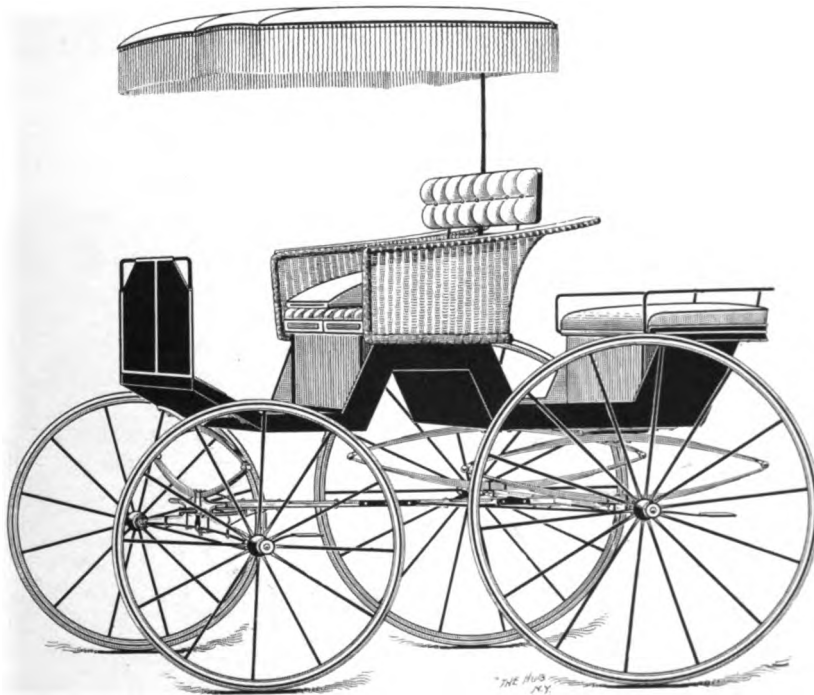


No. 500. Pony Trap.

SCALE, ONE-HALF INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.25.)

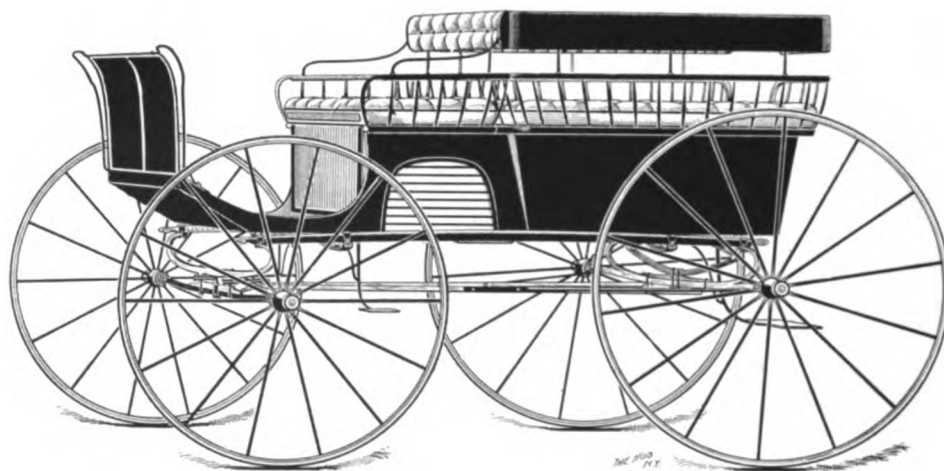


No. 501. Ladies' Spider.

SCALE, ONE-HALF INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.50.)

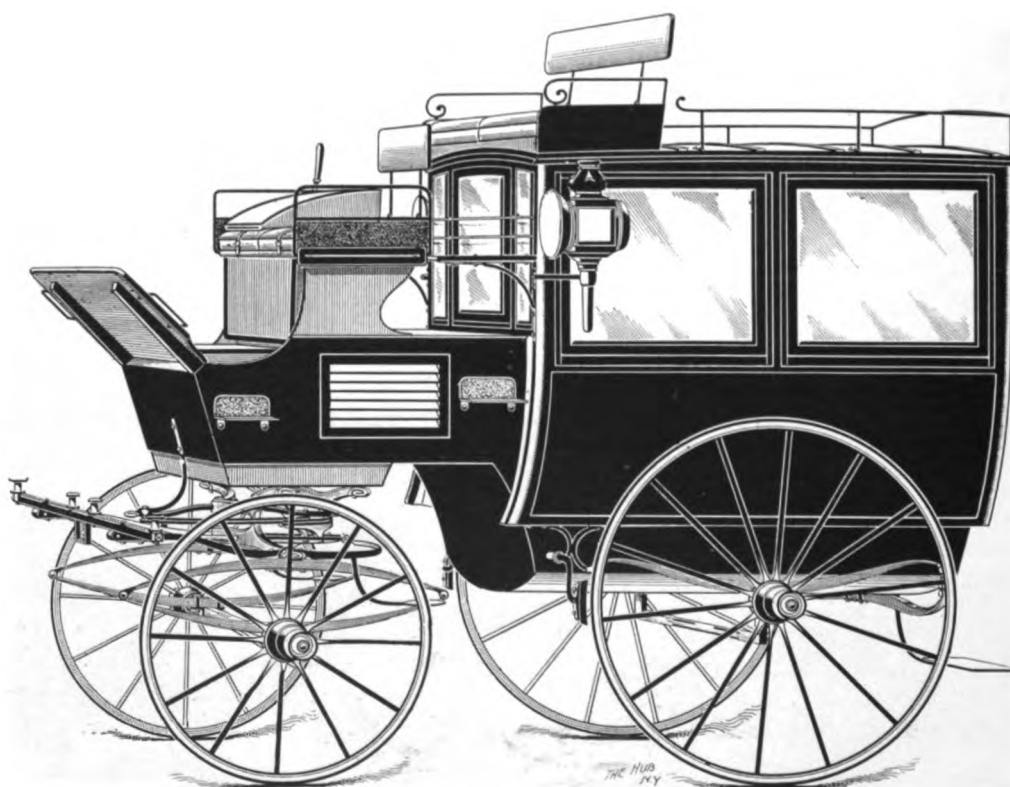


No. 502. Six Passenger Wagonette.

SCALE, ONE-HALF INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.50.)



No. 503. Opera 'Bus.

SCALE, ONE-HALF INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.50.)

Plate CXX.

Charette.

See description under "Latest Styles."

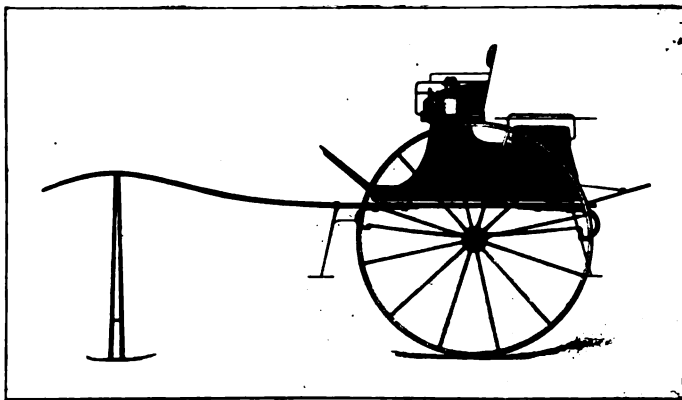
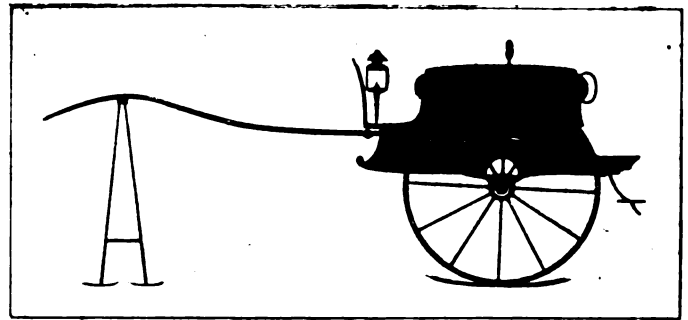


Plate CXXI.

Charette Tandem.

See description under "Latest Styles."

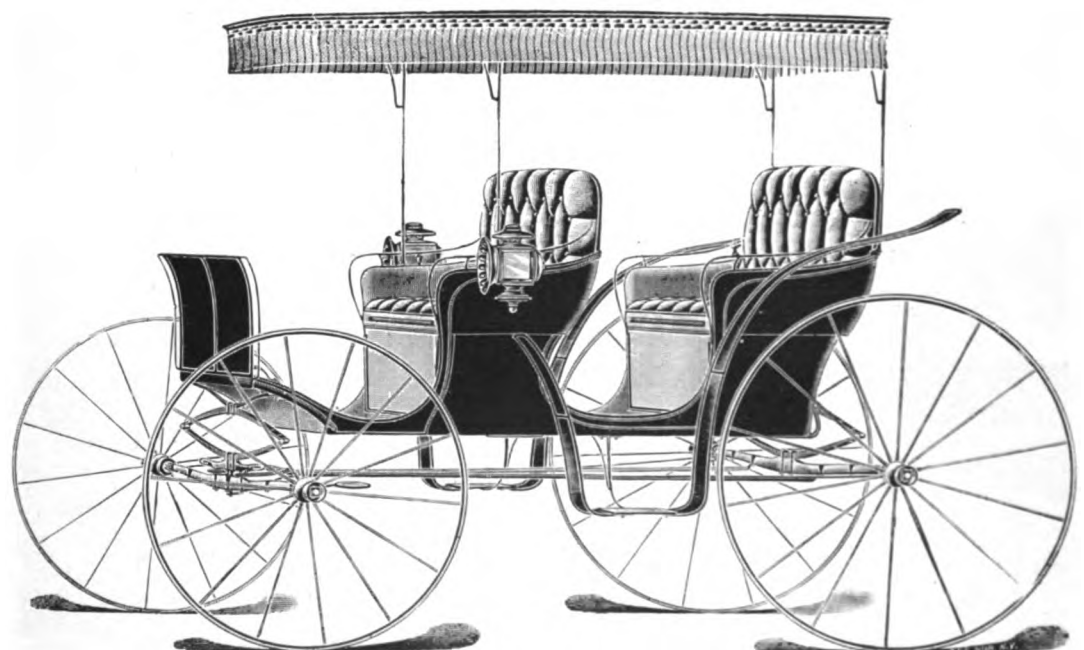


Plate CXXII.

Manhattan Surrey.

See description under "Latest Styles."

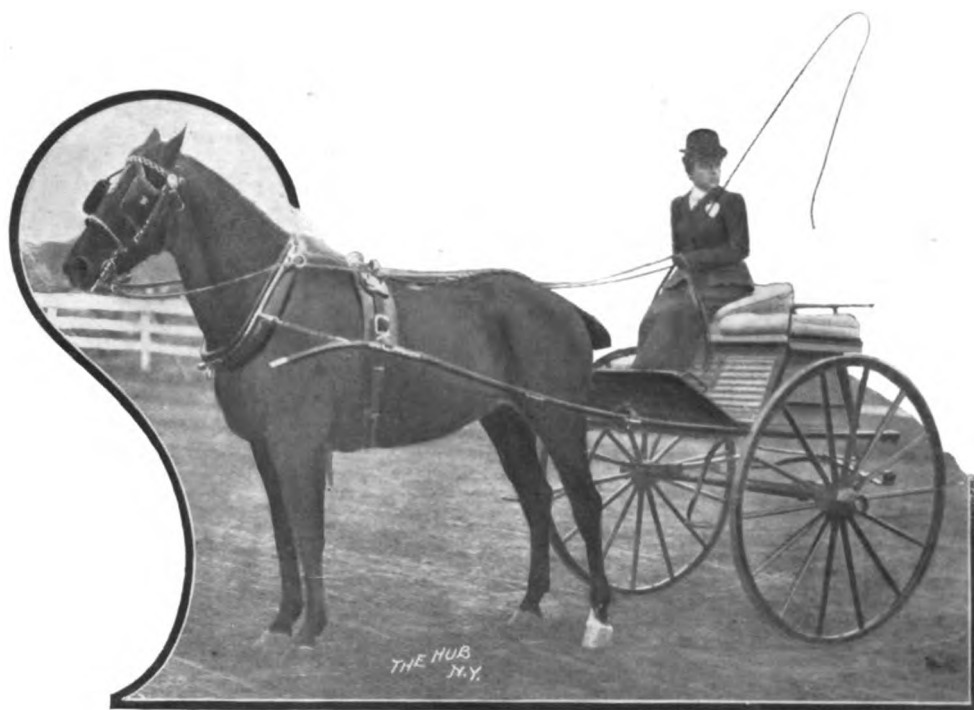


Plate CXXIII.

Skeleton Cart.

See description under "Latest Styles."

(Electrotype, \$2.00.)



Plate CXXIV.

Irish Jaunting Car.

See description under "Latest Styles."

(Electrotype, \$2.00.)

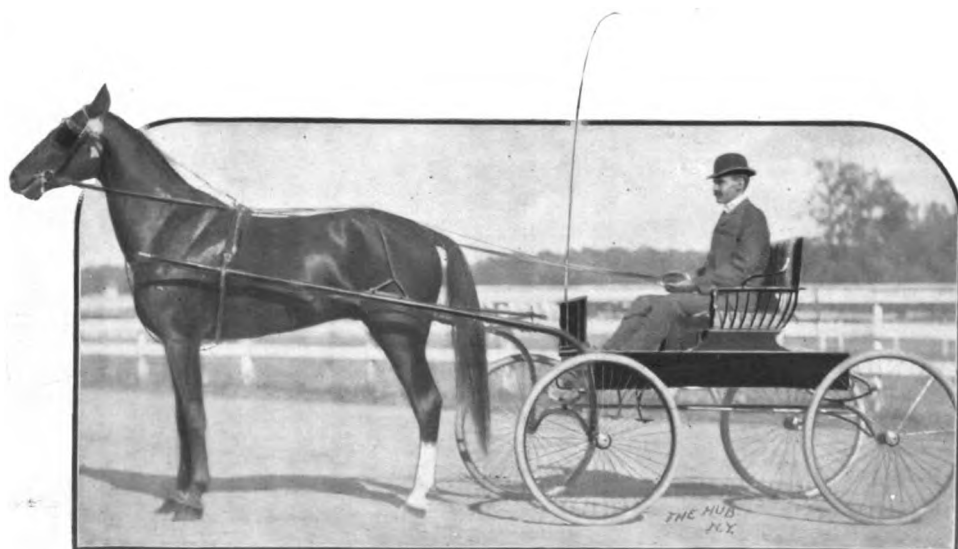


Plate CXXV.

Pneumatic Runabout.

See description under "Latest Styles."

(Electrotype, \$2.00.)

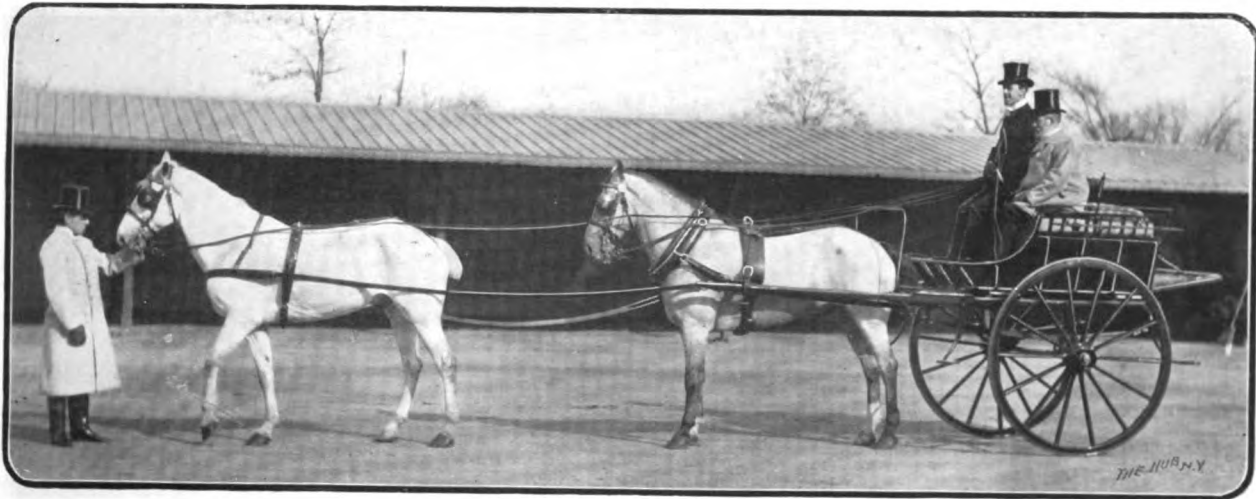


Plate CXXVI. Tandem of John H. Shults, Jr.
(See description under "Latest Styles." Electrotypes, \$2.00.)

Plate CXXVII.

Burton
Mansfield
and His
Original
Whitechapel
Cart.

See description under
"Latest Styles."

(Electrotypes, \$2.00.)

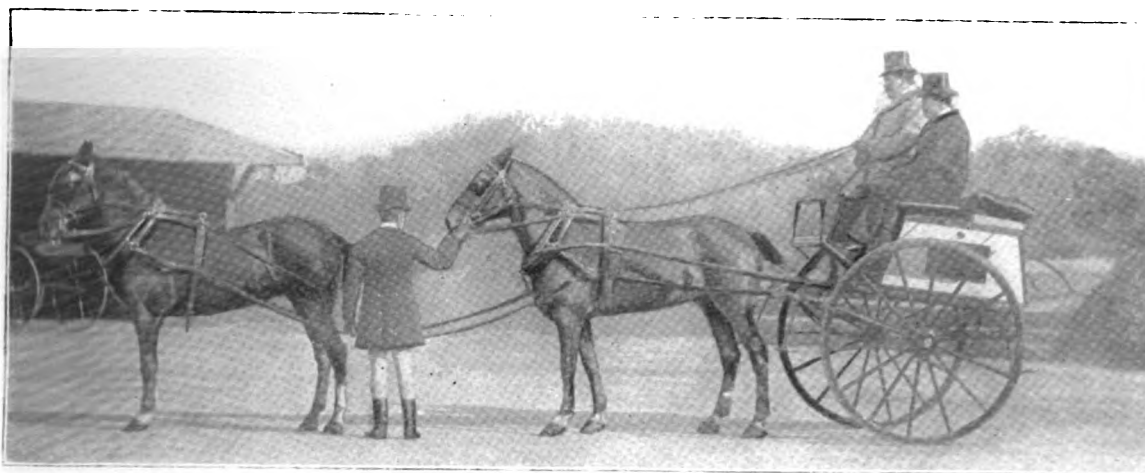
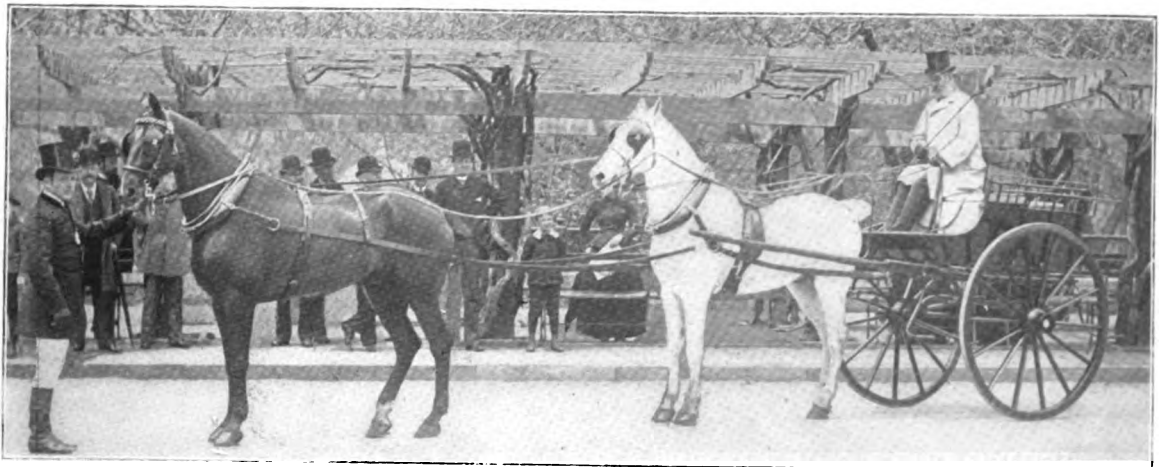


Plate CXXVIII.
Tandem and
"Going-to-Cover"
Cart.

See description under
"Latest Styles."

(Electrotypes, \$2.00.)

Plate CXXIX.

American
Team and Cart
Photographed
at
Baden-Baden.

See description under
"Latest Styles."

(Electrotypes, \$2.00.)





Century Vehicle Co.'s Stanhope.

For description, see Automobile Department.



Conrad Co.'s Business Wagon.

For description, see Automobile Department.



St. Louis Motor Carriage Co.'s Business Wagon.

For description, see Automobile Department.

**Grout Bros.
Steam Automobile.**

For description,
see Automobile Department.



Loomis Light Delivery Wagon.

For description, see Automobile Department.

**Thornycroft
Steam
Truck.**

For description, see
Automobile
Department



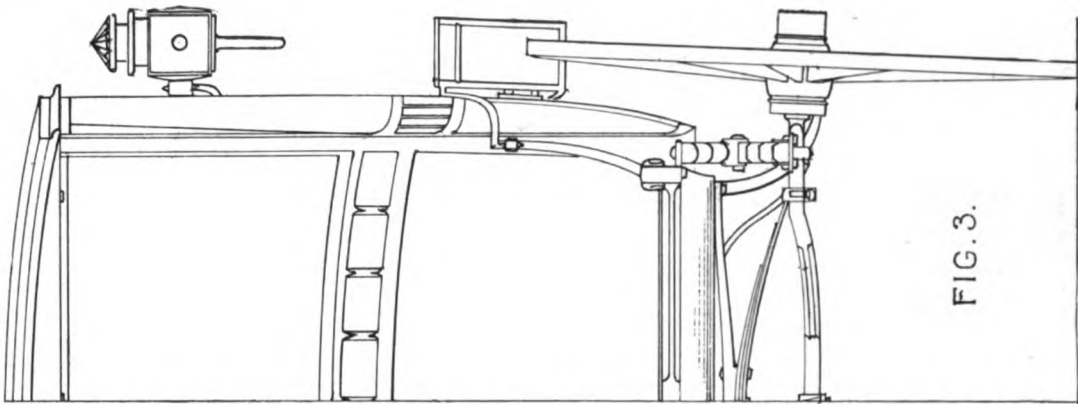


FIG. 3.

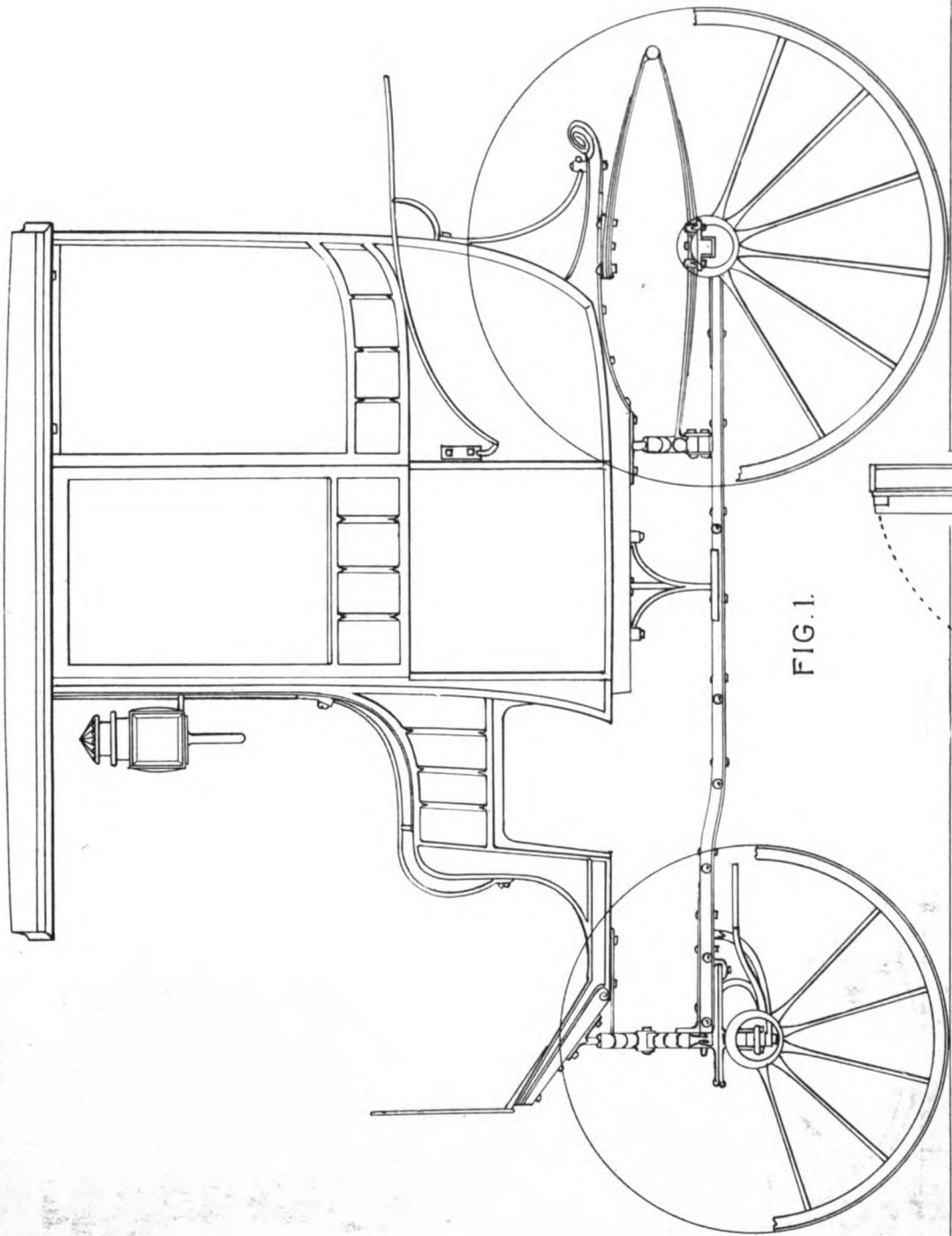


FIG. 1.

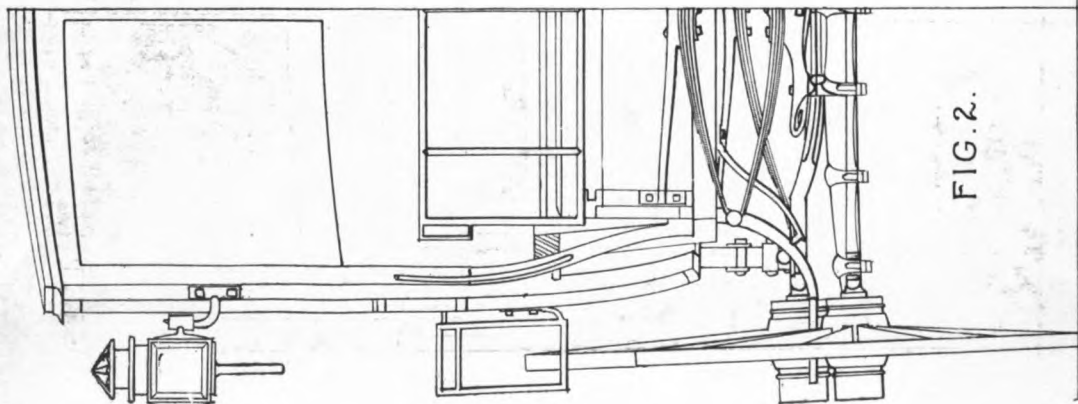


FIG. 2.

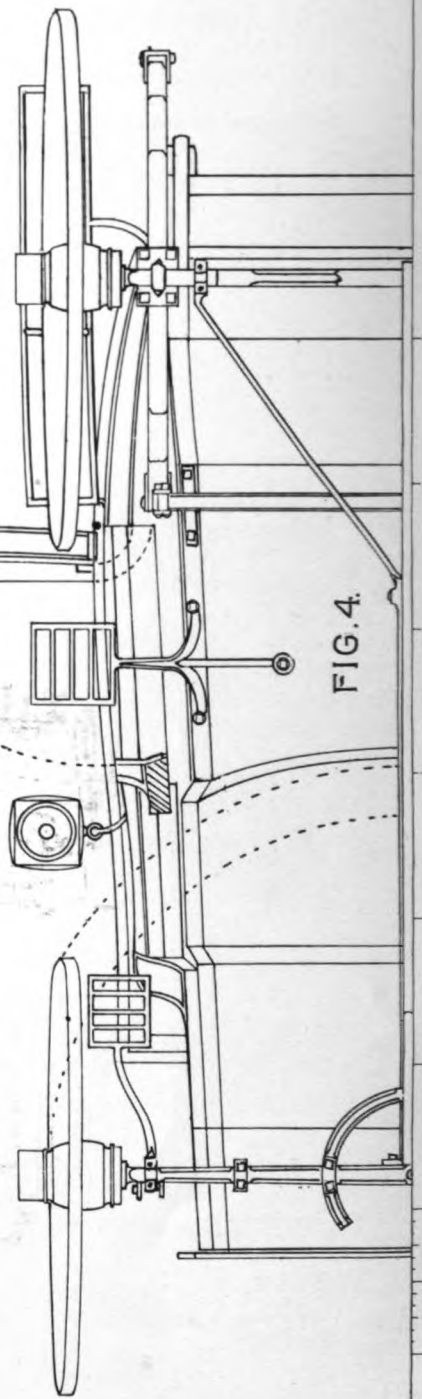


FIG. 4.

WORKING DRAWING

OF A STATION WAGON.

SCALE, $\frac{3}{4}$ INCH TO

THE FOOT.

CARRIAGE TECHNICAL DEPARTMENT.

Comprising the Wood, Smith, Paint and Trimming Shops.

WORKING DRAWING OF A STATION WAGON.

Scale, $\frac{1}{4}$ inch to the foot.

THIS design of a light curtain rockaway, or, as more generally termed, a station wagon, shown in our working drawing, is the latest Eastern type of perch gear, glass door and division front vehicle of its class, which may be seen at any time on the thoroughfares of Boston and suburbs. These carriages are expensive, elaborate, and of fine workmanship, both as to the iron and wood, as well as the painting and trimming. No cloth or lace seems to be too good for this particularly light carriage, suitable for a sixteen-hand horse, the painting being blue, red and yellow, with drabs and maroon for trimming. The front seat is finished up smooth, without tufting or buttons. The surface of the rocker has an iron plate cover, instead of leather; the top of this plate is drawfiled to an oval surface and as smooth and true as is possible to make it. The edge of this plate forms one of the beads on the toe of the rocker; it is split and runs part way up the stanhope pillar and let in level with the surface. The dash foot sets on top of this plate, and is polished up in good shape; hence this plate supports the joint at the intersection of the foot of the pillar with the rocker. The division front is built in solid to the coupé pillars, and provided with two glass frames. It can, therefore, be made to look light, and will paint and trim out better than a shift partition. It also makes a stronger coupé pillar than the other, and thus prevents the spring in the doorway, a fault sometimes complained of and one to be avoided at all hazards; hence the coupé pillar forms part of the curve for the top edge of the front seat panel, and is a continuous sweep from toe to roof rail and defined by an even width of moulding its entire extent. This seat is framed, grooved and paneled, the top moulding connecting with that of the moulding worked on the coupé pillar forming the panel as slatted off in the side view, and it makes the coupé pillars a part of the front seat, thus dividing the side surface of the body into three distinct panels, no two being alike. The panels for the door and rear quarters extend to the top of the framing, with the slats glued on and chamfered, as shown on the drawings.

The body is mounted on half-platform springs at the rear, which mode of suspension is deemed the best to prevent the springing of the body in the doorway. The rocker is extended and forms the pumphandle. The bottom plate spring flap is solid forged and extends out, and both to the top of the spring. The sweep of the lower outline of the pump handle is a curve symmetrical with the curved direction of the spring and is suggestive of this purpose. The brace is made to touch the pump handle, the corner pillar, and give support to the swing. The stay is, therefore, solid to the wing, but could be made separate, where the builder is not particular or fastidious about the appearance of a solid forged brace, and is not particularly careful to show the best workmanship, at a point so conspicuous. It is clear that the body framing is built on to the rockers, which, in turn, is supported by the edge plates. These plates are concealed within the body along the inside of the rockers, to which they are carefully fitted and fixed with No. 18 screws; hence the pumphandle is as close in line with this edge plate as possible, and the rocker that carries the weight rests on the spring, and is not supported at a great distance, like that of an iron loop bolted to the bottom sides, closer to the thin quarter panel, which is liable at any time to be disturbed or injured from the stress imposed upon a curved loop, necessarily bolted to the bottom side, and will later on sink into the surface and produce a mutilated moulding, either on the side or at the back, for which there is no remedy when once the damage is done.

The rockers are both contracted and inclined. This is necessary if we wish to build a fine looking body, which cannot be done with a rocker that is parallel to the axis at all points, because the body would be too wide at the toe and too narrow at the corner pillars, or

little or no round could be given to the sides without obtaining an excessive width at the hinge pillars, the consequence being that the body would look high and narrow. With a straight rocker we must submit to a sacrifice at some part of its construction, for in laying out the plan of the body, as shown in Fig. 4, we must know the gear, its dimensions and the hang of the body; hence our design made specially for this month's HUB is a working draft of the carriage, intended to show up all the important points and the appearance thus obtained by the four elevations.

Fig. 1 is the near side of the carriage mounted on a set of 36 and 45 in. plain wood hub wheels to a height, at the door, of 30 in., and at the boot rocker, to a height of 32 in. This rocker is on a line with the foot of the coupe pillar and the door. The length of body over all is 6 ft. 9 in.; height, 4 ft. 10 in.; head room for front seat, 3 ft. 8 in.; width of door, 20 in.; of rear quarter, 22 in.; of front seat, on the side, 17½ in.; leg room, 23 in.; width across hinge pillars, 50 in.; across coupe pillars, 48 in., and across the corner pillars, at the back, 44 in., giving a swell to the door of ¾ of an in., and a contracted swell to the rear quarter of 3 in. on each side. Width of the cushion for front seat, 40 by 17½ in. The contraction of the rocker is 4 in. on each side; width across at each end is 32 and 40 in. outside measure, being 8 in. wider at the back than at the dash. The flare of the rocker is considered from the lowest point at the door to that of the highest, at the front seat, or wheel house; this flare is at this height 15 in.; thickness of the rockers are 1½ in. and wide enough to take a 3 in. edge plate. The thickness of this plate is ¾ in., but at the boot and toe it is less according to the depth of the rockers, minus the 7-16 in. bottom boards, which will give the plate a width of 2 by ¾ of an in.

An edge plate 3 in. wide and ¾ in. thick is a stronger plate than one 2½ by ½ in., and will weigh no more, and when set to a flare as here shown the rockers will spring less than if set square up and down. That is to say, that flaring the rockers out at the top strengthens the body lengthwise as well as crosswise; the cause for this is that the many crossbars and panels set in to the rebates of the rocker tend to stiffen the whole structure, a result which has been observed by many body makers of long experience, and is, in carriage body making, well nigh an obvious fact, and will reason out so if the mechanic will go into the matter sufficiently. While we are not going deeply into the subject of body making relative to the design, yet we must notice the above, because in the suspension of the body, the rockers have much to do with the method which we follow in mounting the body onto the springs, as it is clear to the eye that the cross spring must carry half of the weight, which is impinged upon the axle, and this for both sides; evidently the pumphandles carry the other half of the weighted body, but if an elliptic spring was employed instead, then the pumphandles would carry all of this weight. It will be seen that the ends of the spanbar which takes the cross spring, is also bolted to the rockers, close up to the edge plate, and that the body will not spring in the doorway, and that on account of this method of hanging up, the body can be made much lighter looking, and of more satisfactory appearance when put into service. It follows that the body can be wide at the back and yet have a 4 ft. 8 in. track, and place the side spring where we please, besides an elliptic spring is not so pleasing to the eye, especially from a rear view, as does the three-quarter elliptic and cross spring in this instance. In a word, it is too common and spoils the rear appearance of the carriage, imparting a meager or nude aspect. The elliptic spring is all right in its place, but the reverse in a place where it is not symmetrical with the design of the lower outline of the body.

The distance between center of front and hind wheels is 66 in., and the size of the axles for the front 1½ in.; rear, 1¾ in., which is all that is required if we begin to consider their position, their construction and the weight which they carry. The hind axle carries more weight than the front axle, because the weight in the body of four rider and the body itself is nearer to that axle; second, the lateral

stress on the front axle is less than that on the hind axle, because the wheel is lower; on the other hand, the weight on the hind axle is close up to the hub, each side; this axle is stiffer by dropping it in the center, than it would be if straight or arched the opposite way, to spring from either weight or side thrust it must be at a point between the spring and collar. Dropping the axle in the center prevents its rolling, arching invites it; making it straight invites vibration very noticeably and tends to give an excessive jar on the clip fixtures of the axle, and is destructive to the axle box. As shown here the axle is in the best position to avoid springing, vibration and rolling. We apply this same reasoning to the construction of the front axle, which is just as low as the space between the bracket and center of the wheel will allow. It is of no special consequence how much we drop the center of the front axle, it will not lower the body, since the height of the front wheel as it passes under the arch determines the height of the body above the floor and is directly responsible for the height of the roof, or top; in a word, it determines the height of the seat and the head room over this seat. To lower this front axle would also drop the perch an equal amount at the front, thus making the space between the boot and perch greater than at the doorway, and the amount which the axle is dropped must be again made up in height by the spring and spanbar, so what we would gain in one direction would be lost in another. Here its supporting ability is reinforced by first fantailing the axle in the center to the width of the spring, and slipping to the hickory bed as shown in Fig. 2, and also using a heavy fifth wheel of 14 in. circle, which carries the weight exactly that amount out of the center.

The position of the hind wheel is determined by the swing of the door, when turned out as shown in Fig. 4, and is set ahead just as much as the bottom of the door will permit. The door is shown opened, the moulding on the bottom will not touch the tire of the wheel, and if it clears a half an inch it is just as good as to make it clear three inches. The more turnunder we give to the standing pillar the further ahead we can set the hind wheel, but we must consider that the thickness of the door and the added turnunder cuts into the 20 in. space that amount, which is here four inches, leaving a space of about 15½ in. the shut bevel on the coupe pillar accounting for the ½ in. Hanging the door on curved hinges is one method employed to obtain more room for entrance, but this is an ugly makeshift for the benefit obtained, because if the hinge is bent back one inch off the center, the amount thus secured is really but the half of one inch, it stands to reason that if both leaves of the hinge are curved back, one will be on the door the other on the standing pillar, and that when opened the one on the door offsets the one on the standing just half the amount of the curve, because the door only makes a quarter of a turn, or opens just half the amount of the swing from lock to corner pillar. When the body is resting on the trestle, the door can make a half turn against the side of the body, then the hinge carries the door back from the front face of the hinge pillar, the amount that the hinge is curved out and back of center. The principle is the same as setting the kingbolt ahead of the vertical plane of the axle, but the result is never so satisfactory, because the short space in which the door turns; while the wheel on a platform gear travels almost a half turn, here we use the smallest hinge practicable and set in as close to the body as possible. Above the belt there is no moulding to cover the joint, neither is one necessary; on the contrary, it is objectionable both for appearance and practical use, because with the use of an outrigger hinge, we must cut the moulding on the door to pass about the hinge, and also set the hinge out so that the pin can be knocked out and in for the unhinging of the door for the convenience of painting and trimming. So we see that little is to be gained by either the curved hinge or door moulding, because of the latter, the light through the joint is concealed or cut off by the trimming on the inside, which is fixed to the standing pillar.

The back and bottom view shows a crossbar framed into the pumphandles just ahead of the scroll, which will look better than a cross at the center over the axle, and those who have seen it done this way approve of it, as it fills the space better than when close up to the back panel, and does not crowd one part onto another, and thus partly conceal the back moulding.

Size of front spring, 35 in. long center of eyes; 9 in. high; 1½ in. wide; 4 plates of No. 2, 2, 3 and 4 gauge of steel. Rear side springs, 37 in. long; 9 in. high; 4 plates of Nos. 2, 3, 3 and 4 gauge of steel, 1½ in. wide. Hubs for rear wheels, 7 in. long; 5½ in. diameter; point band, 4 by 2 in.; back band, 4½ by ¾ in.; front hub, 5 by 7 in.; point band, 4 by 2 in.; back band, 4¼ by ¾ in. Spokes, 1¼ in. Tire, 1½ by ¾ steel. Rims, 1¼ in. deep.

DESIGNS FOR BUGGY AND SURREY SEATS.

THE almost universal demand for new styles finds an outlet in designs for seats in which the range is less restricted than in the style of the body, and as a result very many different styles of seats will be used on one style of body, and in many cases the effect is pleasing. The designing of seats, like the designing of the body, reflects an individual effort, and while a half dozen or more may be produced by one house, they all follow some one leading idea, that has pleased the designer, and to which he adheres with persistency, and consequently the variety of new ideas is kept low. It seems almost impossible for a designer to drop any one feature which chanced to

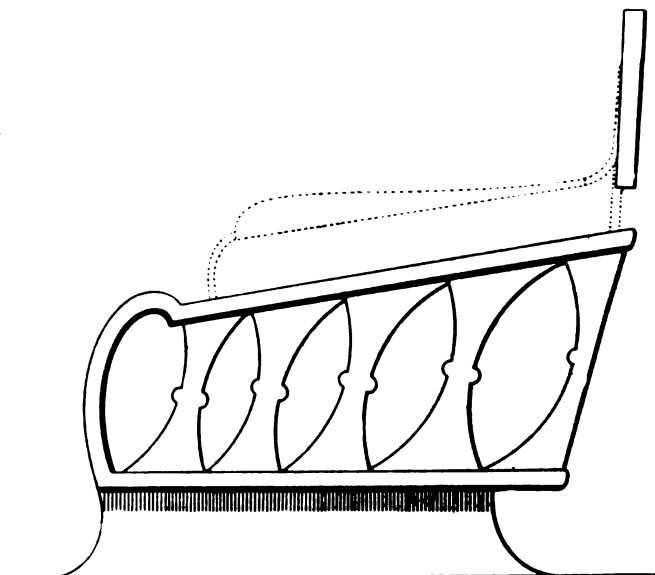


FIG. 1. FLAT SLAT SEAT.

please him, until he has run the gamut, and when the field has been covered, so far as he is able to cover it, he drops it entirely, no matter how meritorious, and takes up a new idea, and can see no beauty except in his latest love. Owing to this inclination the product of the one plant can be determined by a look at the seat. The policy is a poor one, and should be discouraged whenever possible, for no mat-

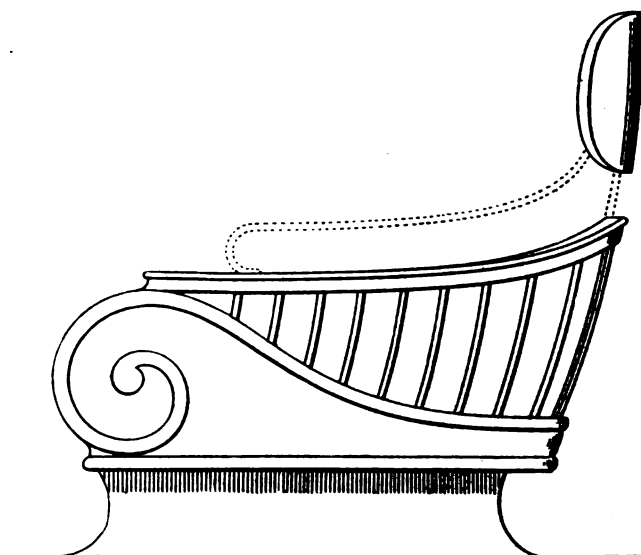


FIG. 2. SCROLL PANEL AND SLAT SEAT.

ter how good an idea may be, it loses its merit when engrafted on everything, and is finally discarded, not because of its demerits, but with it, as with everything else, "familiarity breeds contempt." When there is so much that is new, it is but natural that some should be unattractive, or that some very desirable designs are used upon styles of bodies that do not harmonize with the seats. The latter trouble is a common one. We have seen a style of seat that was an extremely pleasing one on one style of body, which the manufacturer, because of his liking of the design, put onto several others, all of which were unsuited to it, and the universal use tabooed the seat in a few months.

With a view to aiding designers, and also to furnishing new ideas in the way of seats, we have devoted considerable space this month to new and original designs. We have not placed them on bodies,

preferring to leave that to the builder, trusting to his selecting suitable styles from his standard stock of bodies. In nearly all of these designs we have combined the stick or spindle and panel seat, instead of a full design of either. By the combinations, a much

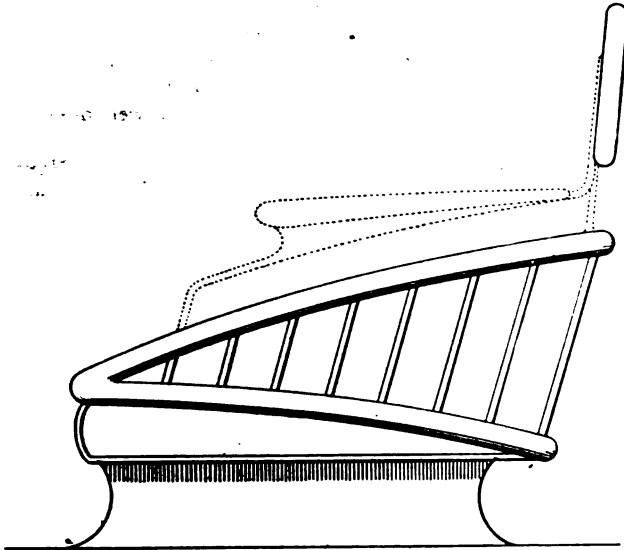


FIG. 3. COMBINED PANEL AND SPINDLE SEAT.

greater variety of good features can be embodied than when a spindle, stick, or solid seat is made up by itself. Then, too, these combination seats can be adapted to various styles of body more readily than when the solid or wholly spindle seat is used. Fig. 1 illustrates a flat spindle or slat seat. In making up this seat the slats are sawed out of $\frac{3}{8}$ in. close grained ash or cherry, each individual slat to a pattern. The corner is made of two half slats, mitered at the corner and securely glued. The rails are $\frac{7}{8}$ in. thick and $\frac{3}{4}$ to 1 in. deep, according to the size of seat used. The under sides are grooved to take the $\frac{3}{8}$ in. slats, as is also the ends and back edge of the seat frame. The rail and the edges of the seat frame are rounded to a half oval. The front is made of bent ash and spliced to the rail. If the coloring of the body warrants it, the slats can be given a bright color, and the edges finished black.

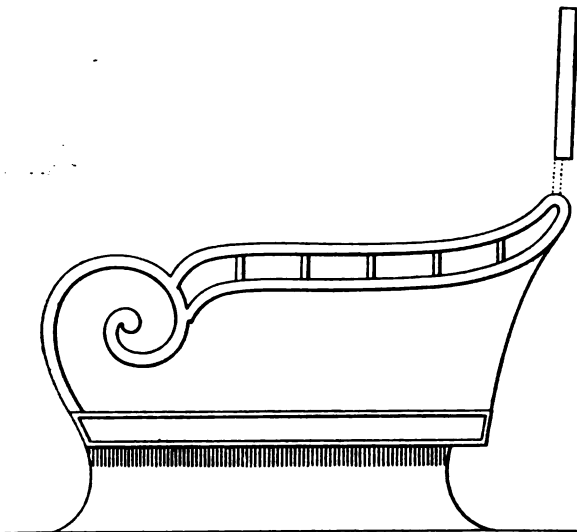


FIG. 4. SOLID PANEL AND SKIRT SEAT.

Fig. 2 is designed for a surrey or runabout seat, where the lines of the body are more or less cut to curves. The lower panel is of solid whitewood, with the moldings worked on, and the panel slightly convex back of the scroll, the convexity being graduated from a flat surface at the scroll. The rail should be of bent ash, finished with a molding on the upper edge. The corner is given a moderately full round. The slats are flat and bent as shown. The lazy-back is also bent.

Fig. 3 shows a seat with a triangular end, with graduated slats. The lower panel should be of whitewood or cherry, with a heavy molding worked on the upper edge, and a flat panel edged with a $\frac{1}{4}$ inch molding on the end and bottom. The top rail should be of ash and spliced to the panel at the front and secured by stay irons. The slats are cut straight $\frac{1}{2}$ in. wide and $\frac{1}{4}$ in. thick, and rounded on the outer edge to a flat oval, leaving $\frac{1}{8}$ in. flat on each edge of the slats.

Fig. 4 shows a design for a solid panel seat, all the moldings except the short uprights on the top belt being worked on the end panel, being flat, the back slightly concaved. This seat has a molded skirt. The short slats on the top belt can be nailed on, or they may be dispensed with if preference is given to the plain panel. In painting this panel, whether cross molded or not, can be finished with a different color than the other parts of the seat.

Fig. 5 shows another slat and panel combination. The lower panel to be of cherry or whitewood, boxed in to the depth of 3-16 of an inch, the inner edge of the molding rounded to a fully half round. The top rail is of bent ash securely lapped and stayed to the panel in front and resting upon the top edge of the back panel. The slats may be flat or oval. If desired the entire seat end may be a solid panel with the depressed panels boxed in and the upper slats nailed on. For a trap or driving cart the upper triangle can be painted red or whatever color may be used for the gear and other trimmings, the slats to match the main panel.

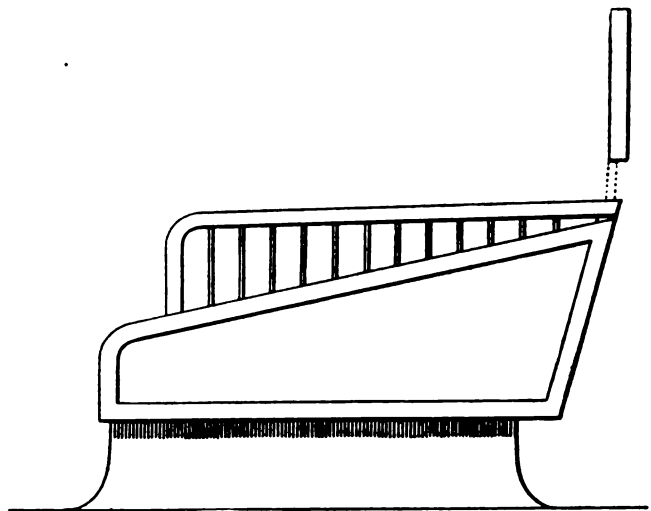


FIG. 5. TRIANGULAR PANEL AND SLAT SEAT.

Another combination is shown by Fig. 6. In this the main panel forms the top triangle, the front end of which is the full width of the seat end. The back corner has a corner post, the same as the full open slat seat. The exterior molding and corner posts to be of uniform width. The triangle panel is boxed into the solid, and its lower edge finished with a $\frac{1}{2}$ in. molding, all molding being finished flat, with slightly beveled edges. The slats should be 1 in. wide and full $\frac{1}{4}$ in. thick. In painting these may be given a bright color, or they

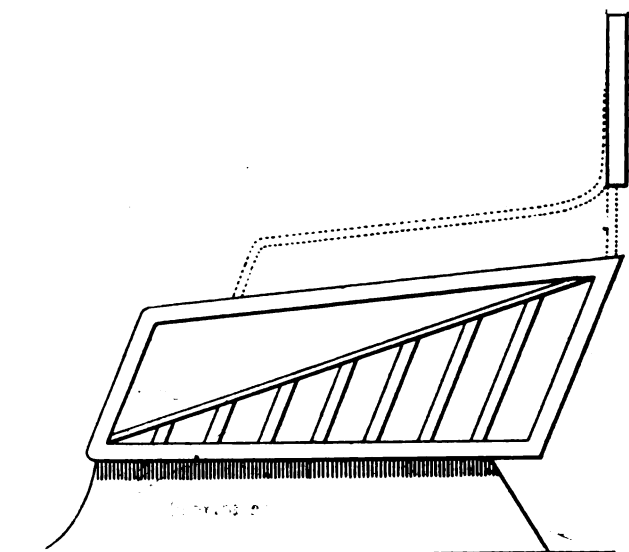


FIG. 6. PANEL AND SLAT SEAT.

may be of the same color as the body, and the triangle panel painted bright instead. In designing these seats care has been taken to avoid extra work in making them up.

A LONDON lawyer wrote several hands, one of which no one could read but himself; another which his clerk could read and he could not, and a third, which nobody could read.

IRONS FOR A SHIFTING RUMBLE.

It often becomes necessary to remove the rumble from driving phaetons and others of that type, in order to make use of the platform for carrying space for transportation of light packages, lunch baskets, hampers, etc. To remove the seat as now constructed, and to replace it, consumes much time, in addition to marring the paint, etc. We illustrate and describe herewith a simple arrangement whereby time can be saved and injury to paint is obviated.



FIG. 1.

The seat as we show it has the footboard fastened to the pump-handles in the usual manner, and of the usual size in all particulars. The seat and its furniture being so constructed as to be removed from the board at its connection and leave the board free and clear, and make it what it was termed years ago, a "baggage board," or "opera board."

We begin with Fig. 1. A, a piece of 3 by 8 in. band iron about five inches over all; B is the rounded front end as per A, Fig. 3. The hole C is for securing the plate when complete. The holes D are for securing the front end to rumble board when complete. The holes

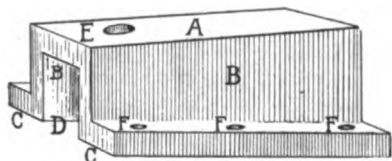


FIG. 2.

EE correspond with the holes F, Fig. 2, and are for the purpose of riveting Fig. 2 to Fig. 1, to form the box, or pocket, necessary in the construction.

To make piece Fig. 2, take the best quality of band iron, $2\frac{1}{2}$ by 10 in., which permits of making the bends transversely, or use mild sheet steel, No. 10, and form by means of vise and mandril, as per illustration. A, top of box; B, sides; C, the flanges by which the box is secured to Fig. 1, by riveting through the holes EE, Fig. 1 and F,

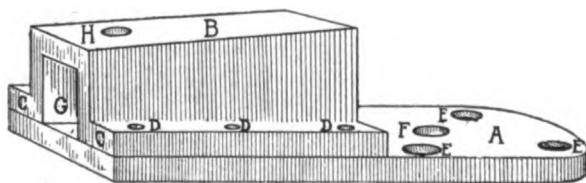


FIG. 3.

Fig. 2; D, the recess; E, hole used for securing the whole to the foot-board when complete. Make the recess D $1\frac{1}{4}$ in. wide at front end, and $1\frac{1}{8}$ in. in width at back end; $\frac{3}{4}$ in. in depth at front end and $\frac{5}{8}$ in. in depth at back end, such taper being necessary for ready and easy shifting and adjusting. Braze to the under side of plate, Fig. 1, two boss as per Fig. 5. A, section of plate; B, boss with hole for

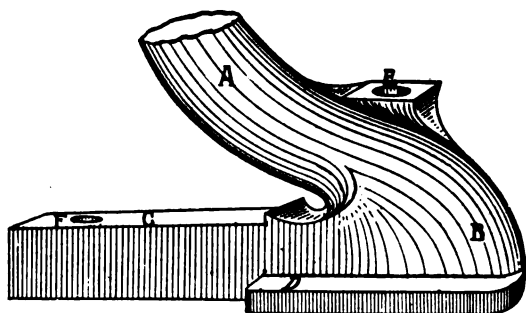


FIG. 4.

threading for set, or securing screw that passes through the holes C and F, Fig. 1. The plate, however, may be formed solid with the plate by welding, which is the same as to say that the welding is the most desirable, as it makes the plates secure and is easily done. The boss is made round, so that it can be let into the bottom board by a

hole of the required size, simple boring. Make each $\frac{3}{4}$ in. in diameter and $\frac{3}{8}$ in. thick. Furnish the front one with $\frac{3}{4}$ in. set screw with sixteen to inch, and the back one with 3-16 in. set screw eighteen threads to the inch. Then rivet Fig. 2 to Fig. 1 with good Norway rivets 3-16 in. diameter, with plates fairly well countersunk, so as to admit of a good stiff burr. When thoroughly riveted together, braze together, using either sheet brass clips or brazer's spelter; the latter is preferred, as it is more uniform in melting and flowing and seldom requires a second heat. With care the job can be well done in one heat.

Up to this stage, no filing of any amount has been done. Now with proper files clean out the box smooth and clean on all four sides, then proceed to finish and get the finished box plate as per Fig. 3. A, the front end of the plate, with holes E for securing the plate to the foot-

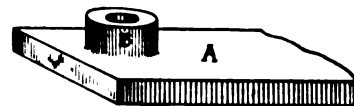


FIG. 5.

board. Holes D on the flange C are for screws that assist in securing the box to the foot board of the rumble. Screws may be used throughout. 3-16 in. bolts, with countersunk heads, for the front holes would be the safest, using for the back holes 1 in. No. 12 screws for the two back holes. F is the hole for the front set screw, to take $\frac{3}{8}$ in. screw; B, the outer case of the box complete, with the hole H for the insertion of the back set screw, which make

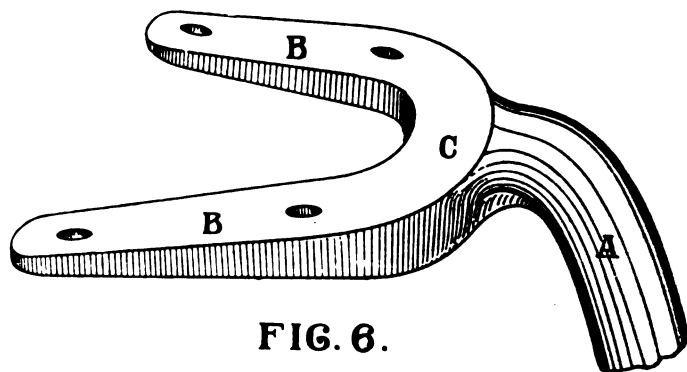


FIG. 6.

5-16 in.; G, the recess or pocket; C, flanges for the insertion of the holes D, as shown; corresponding holes being on the opposite side. It is well to use 3-16 in. countersunk bolts in the two back holes. Make the set screws with plain square heads, with top corners slightly rounded to prevent catching or tearing articles that may come in contact with it.

Fig. 4 shows the foot of the seat leg. A, section of the oval upper part; B, where it ends at the front; E, the front securing hole; D, a flange projecting on each side to give a sufficient bearing to prevent tilting; it also covers the front end of plate A, Fig. 3. C, the stem fitting into box B, Fig. 3; F, securing hole. Make A of $1\frac{1}{4}$ in. full oval; C, to suit the box; D, $\frac{1}{4}$ in. thick, slightly rounded on top, so as to relieve of hard appearance. Make C with slight shoulder on the top at F, so as to fit hard against the box.

Fig. 6, an outline of upper section A, continuation of A, Fig. 4. B, branching part for seat frame, with holes D for securing to seat with 5-16 in. bolts. C, central section. Taper from $\frac{3}{4}$ in. at C to $\frac{1}{4}$ in. at terminals of B. Use Norway iron or mild steel only.

POPULAR GREENS SUITED TO POPULAR VEHICLES.

As a rule carriage painters fail to appreciate the extent and variety of the greens as a class of colors specially designed, in the main, for business wagon painting. The greens actually employed are few in number as compared to those which color manufacturers have on their lists.

If more painters were acquainted with the many very beautiful greens which are now so easily obtainable, a new lease of popularity for the once widely favored color would be assured. As a class, greens are durable, hold to the original purity of color well, and are applied easily. Why not then extend their use?

There are a very large number of paneled top business wagons of light build to which the lighter and more delicate shades of green seem particularly adapted.

For example, paint the upper panel in pea green or light willow green, make the belt panel in a medium shade of onyx green, and then continue the lower panels and the running parts in the pea green or the pale willow green. No more captivating display of color for a light build job can be made than this. Ornament in gold and twentieth century red or black. If scroll work is employed for corners, use two or three shades of deeper pea or willow green for the scrolls and shading. Lovely effects in the most delicate of all greens are thus produced. In case the striping and corner pieces on body are thrown in green make the striping of running parts to match, striping with a $\frac{1}{8}$ in. line of deepest green for center, and distance fine lines of lighter green $\frac{1}{4}$ in. from the heavy line. This will form a unique combination in varying shades of the same color and in the delicacy of its shade cannot well be surpassed in the domain of green.

For the heavier type of paneled top business wagons, if choice is made to paint them in green throughout, the painter has at his command superfine royal green, a dark elegant color, or bronze green, true token of elegance in its every shade; or deep onyx green, which in the depth and richness of its color flaunts the badge of royalty. Or, if inclined to reject the above he has choice of Victoria green, an entrancing dark green which grows in beauty, as a background for gold ornamentation, or medium green, which under carmine and black striping effects discloses an aristocratic lineage; or No. 147 green, or New Haven green, stately and exclusive as its name would suggest, or the deep, fine shades of Brewster, Merrimac and olive green. Decorated in gold, red and black, the above greens are unrivaled for the uses here indicated.

As belt panel colors, green, light green, milori green, dark olive green, medium moss green (a most beautiful green, be assured), Merrimac green, light Paris green when used over an azure blue ground, coach painters' green, dark Victoria green, blue green bronze green, medium Quaker green, light, and royal green, promise glorious effects when used in combination with harmonizing colors.

For running parts a light shade of bronze green makes a very handsome gear color for both light and heavy pleasure vehicles. Stripe with a $\frac{1}{4}$ in. line of black, edged with a fine line of gold. Light green, light, likewise offers a pretty gear color. Stripe with a $\frac{1}{8}$ in. line of No. 40 carmine, or eastern red, and $\frac{1}{4}$ in. each side cast a distance fine line of black. For surreys, phaetons, Victoria stanholes, rockaways and some of the heavier traps this makes an especially rich and pleasing color, and under almost any popular striping color this green looks alike rich and effective. Light shades of Quaker, Merrimac, olive and Brewster green also offer alluring gear colors for light pleasure vehicles. One of the most fascinating road wagons seen on the fashionable street of a big eastern city recently was painted black, body and seat, light pea green seat riser, and light pea green running parts. The running parts were striped with 1-16 in. line of gold, with distance fine lines of black. While at first glance the effect was just a degree "loud," it was strikingly handsome withal.

Many of the trimmest looking and most businesslike wagons seen along the marts of trade have canvas tops and bodies broken into small panels, made, in fact, after the style of the regulation express wagon. Sometimes you see the running parts carrying lighter shades of green than the bodies, but more often they are painted in popular shades of red. For such bodies, greens are particularly suited. A fashionable green for this class of work is Ketterer green, a dark rich color taking well to black, red, gold or medium lemon chrome striping. So likewise may be mentioned coach painter's green, medium. A new aspirant for public favor in this work is twentieth century green. This is a decidedly charming green, and when striped with $\frac{1}{8}$ in. lines of black, $\frac{3}{8}$ in. apart, with a fine line of golden ochre drawn at the center, between, or, by way of variation, striped with $\frac{1}{8}$ in. line of carnation red, light, or coach vermilion, with distance fine lines of black, you have something of a sensation in green. Brilliant green, dark; blue green, permanent emerald green, dark; coach painters' green, dark; medium Milori green, dark royal green and Adam's express green, are still other greens which commend themselves to the painter's attention in connection with painting the above class of wagons. All ordinary striping effects apply to these colors.

Contrary to the apparently prevailing belief, there is a stalwart class of greens, and without so much as "by your leave" they have come to stay, simply because in the art of vehicle painting they are indispensable.

A thief thinks that every other man would steal.

HOW ZINC WHITE IS MADE.

Zinc white, properly so called, is the monoxide of zinc, consisting of one equivalent of zinc and one of oxygen.

The methods of preparation are various, but in usage the processes practically resolve themselves into two, one known as the French, the other as the American process.

In the French process, as practiced on both sides of the Atlantic, metallic zinc is placed in tubes or muffles and subjected to a white heat. The metal is volatilized, and the issuing vapors being brought into contact with the air, burn (or oxidize) with the production of zinc white or zinc oxide, and the oxide is drawn away by fans and collected in suitable receptacles.

Retorts in layers of ten or twenty are usually built into a furnace. In the covers of the retorts are openings, which serve both for introducing the charge and for the escape of the sublimated vapors.

At the beginning of the process the retorts are brought to a white heat. Two zinc plates are then introduced into each retort. The zinc yields very quickly to the heat and pours out in the form of vapor through the openings in the retort lids. The issuing vapors are met by a blast of air heated to a temperature of 200 degrees. The zinc vapors take fire and burn with brilliant greenish-like flame as soon as they come in contact with the air blast. The product of this combustion is a very fine, soft white powder, which is carried by the air blast through a series of collecting chambers, in which it is deposited in varying degrees of fineness, the finest product being found in the last chamber.

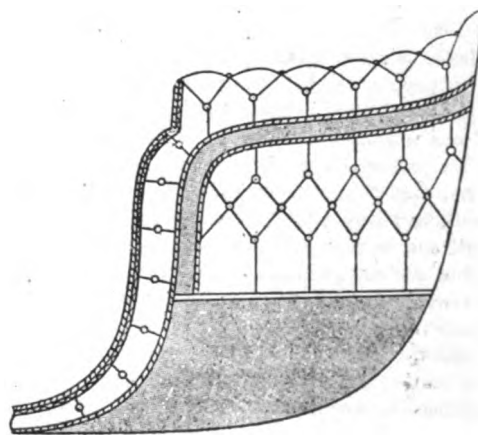
These chambers are emptied from time to time, the product being packed into suitable receptacles for shipment.

Variations of this process are in use for the production of French zinc, but the method of which the above is an outline is believed to be the most satisfactory in results as well as the most economic in details.

The American process, by which the New Jersey Zinc Co. produces fully nine-tenths of all the zinc oxide consumed in the United States, and supplies quite a respectable quantity for export, has been concisely described in these columns.—*Drugs, Oils and Paints.*

TRIMMING A CABRIOLET SEAT.

THE illustration herewith is taken from a print in *Le Guide du Carrossier*, being an illustration of a style of trimming used in a Milord exhibited at the Paris Exposition by the house of Le Cheva-



CABRIOLET SEAT.

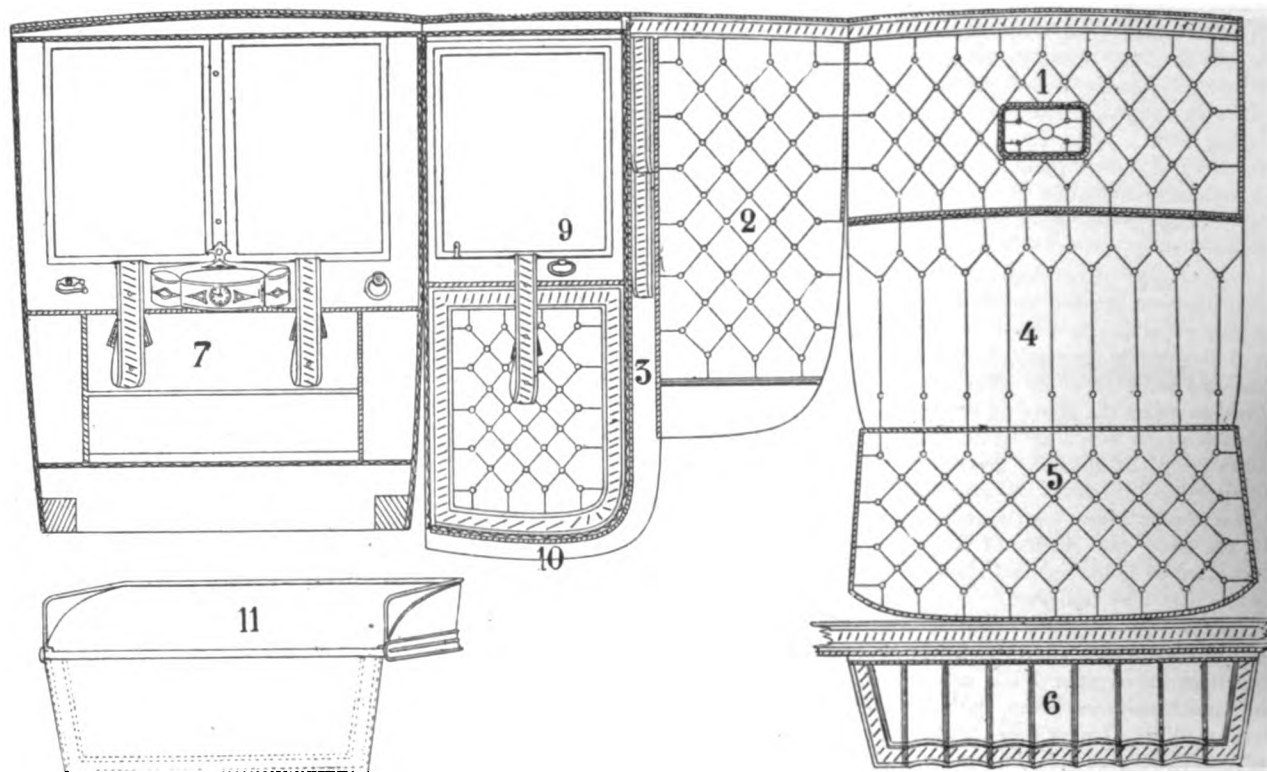
lier. The material was dark blue and narrow lace, the intermediate arm on the quarter being of plain cloth edged on either side with cord covered with lace. The button tufts were cone shaped, the entire combination being both new and novel.

CANADIAN PREFERENTIAL TARIFF.

CONSUL-GENERAL TURNER reports from Ottawa, February 23, 1901, that a member of the House of Commons has given notice that he will make a motion not to allow the preferential tariff of 33 1-3 per cent. on English goods unless they come to Canada by Canadian ports. If this motion prevails, adds Mr. Turner, it will quite seriously affect the steamship lines of Portland, New York, and Boston.

TRIMMING DESIGNS FOR A COUPE.

Le Guide du Carrossier, in connection with a lengthy account of the trimmings shown at the Paris Exposition, gives an illustration



DESIGNS FOR A COUPE TRIMMINGS.

which we have reproduced, of the interior of a coupe and of the driver's seat. Fig. 1, upper back quarter, is of morocco, soft tufted to patterns as shown; Fig. 2, quarter, finished in the same material and

style; Fig. 3, the pillar is covered with morocco, slightly stuffed with curled hair, the arm loops being of broad lace. The back, Fig. 4, has a full squab, but the morocco is slightly stuffed, and the pipes and squares are soft. Fig. 5 shows the cushion, which has a broad lace front. The fall, Fig. 6, is edged with lace and fluted. The lining to

the inside of the front, Fig. 7, is stuffed slightly with curled hair. The principal ornament being the morocco covered toilet box. The sash lifters being made up of broad lace.

CARRIAGE TRIMMINGS FOR 1901.

CLOTHS, CORDS, FANCY FABRICS, LEATHER, LACES, FRINGES, INSIDE TRIMMINGS, ETC.

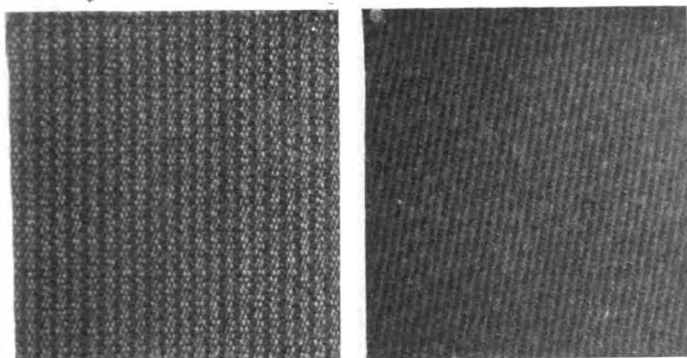
To really learn what is being done in the way of carriage trimmings, cloths, popular and unpopular materials, kinds used on specific classes of vehicles, it becomes absolutely necessary to make an extended tour through the different branches of the trade. Those who supply the materials are better able to give an idea of the general demand than the carriage builders, as the latter cater to the trade of specific localities. One builder may be making the highest grade of work and in material used and character of the finish he appeals to some one class of customers. Another may be a builder of high grade work, but not the ultra-first class. His trade reaches out further than that of the first, but he is not held so rigidly to one character of work. A third may appeal to the general trade, but as he expects to market his products far and near, he is likely to be somewhat careless as to materials and styles. They who produce the low-priced work know no law, other than to use the cheapest material and to make up in the simplest manner. It becomes evident, therefore, that the field is a broad one, and that it is extremely difficult to cover it, except by taking up the various lines in detail. The fashionable custom builders, who are a law unto themselves, are few in numbers, but their influence is great; nothing, however, that is done by others will influence them, but what they do is an important matter, particularly to those who build high grade work, and who pay much attention to specialties. They are on a lookout for new ideas in materials, uses of specific kinds, and patterns. These are bold and aggressive, and are quick to bring out new features in an attractive and artistic manner, and are always on the alert. Manufacturers of the cheaper popular lines depend mainly upon those who produce better goods for their ideas, and follow the best designs closely, but do not attempt to compete in workmanship. The fabrics in the market consist of cloths; these include everything in the line of wool, or wool, shoddy and cotton mixed,

that are made up with a nap surface, regardless of color or quality. The fancy lines consist of Bedford and whipcords and corduroy, together with those having the twilled surface, and the other smooth surfaced weaves, which are brought out from time to time. In addition to the textiles, we have the genuine goatskin, morocco, imitation morocco, made of cow hide split so as to leave the grain part about the thickness of morocco; genuine and imitation pig skin, and the numerous imitations of leather, which are fabrics finished with a coated surface in a great variety of colors and finished to closely imitate leather, the most of which are superior to cheap leathers, and equal for many purposes to much that ranks as high grade.

When whipcords were first introduced, some five years ago, they were quickly taken up by builders of fine no-top vehicles, and proved a valuable addition to the stock of trimming textiles. They were of wool of fine quality and finish, and well loomed, and being in neutral colors, they could be employed on a long range of work. They gave satisfaction to the manufacturer and to the consumer, as they withstood the elements and wore well. Their good qualities and adaptability attracted the attention of builders of medium grades of vehicles, and they began calling for a cheaper grade with equally good finish. Cloth manufacturers met this demand, and quickly thereafter whipcord became the most popular fabric in the line of what is termed fancy goods, for, while the reduction in quality was sufficient to encourage its use by builders of medium grades of carriages, this reduction was not such as to attract the attention of the vehicle buyer, but as its popularity increased, there came a demand for cheap stock, and cord manufacturers were quick to see the possibilities of large sales, if the price could be cut enough to meet the demands of the manufacturers of cheap work, and for about two years a line of whipcords has been on the market, that is about as poor a specimen of the product of the loom as can be shown, but it met the demand, and whipcord graced the \$25 buggy and the equally cheap surrey, and it now looks as though the day is near at hand when whipcord of the original character will be cut for medium or high-priced carriages. Large quantities of this inferior whipcord have been sold, and this year's low priced carriages will be trimmed

with it to such an extent that it will likely be driven out of the market as a material for medium or fine grade vehicles in another year. This is to be regretted, as the high grade whipcord is a most excellent material for light breaks, open and canopy top surreys, no top buggies, runabouts, carts, etc. What will take its place we cannot say; but it is not improbable that a line of cloth with twilled surface may be the coming cloth, unless something better is brought out by the cloth manufacturers.

Another fabric has been put on the market which, for the want of a better name, is designated whipcord. It, like a whipcord, shows a diagonal lining across the surface, but it has a finely corded surface, instead of a smooth one. The apparent cord is much finer than the wale of the finest Bedford cord, and instead of running straight with the warp it crosses diagonally, thus making it a compromise between the Bedford and the whipcord. Then there is another "whipcord" that shows stripes of cords, made by the short overthreads running straight with the warp, instead of diagonal, as with true whipcord.



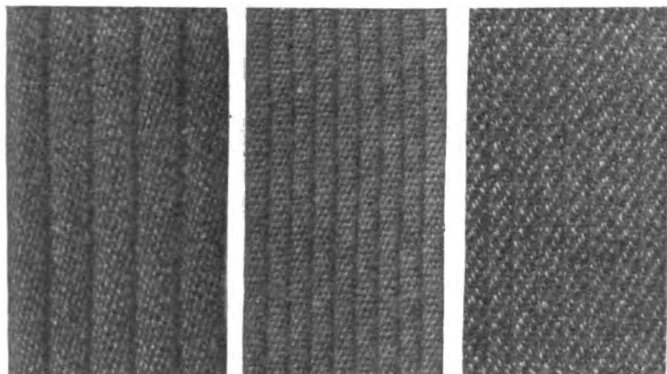
STRAIGHT STRIPE.

WHIPCORDS.

DIAGONAL.

Bedfords have regained their popularity, and, in turn, have about driven the whipcord out of the field as a material for trimming fine vehicles. It is furnished in standard and intermediate wales, which we illustrate herewith, the wales showing actual size. That known as the "standard wide" represents the widest that is recognized by the trade, and the "standard narrow" occupies the other extreme, the intermediates between the two standard sizes being recognized as wide, while that having a wale narrower than the "standard narrow" is designated as narrow. There being several of the outside widths, a goodly variety is offered to the carriage trimmer.

The colors of Bedford, whipcords and other fancy features have a great range, beginning with a decided neutral gray, the black and white mixture, the blue and steel gray, the brown and steel gray, the brown, green and red mixtures. In other fancy cloths, the maroons, browns and different shades of dun cloth are becoming familiar. To these there has been added this season "cadet blue," a very pretty blue in several shades in which the blue is toned down by black. It



STANDARD WIDE.

STANDARD NARROW.
BEDFORD CORDS.

WIDE.

is one of the most desirable we have seen in use. It made its appearance late last year, and was not taken up to any considerable extent. Another peculiar shade is a green, in which threads of two shades of green are toned down with black, giving a mellow, delicate shade of green that appeals to the lovers of the milder tints. Maroons are growing in favor, several shades being in the market.

These range from the dark through the lighter shades, until they closely approach the light wine. These are shown in the twilled as well as in nap cloths.

The effects of these cloths depends in a measure upon the matching of colors for laces, and much care is taken by manufacturers of fine work in producing a harmonious contrast. They send samples of cloth and give general instruction as regards the character of lace, except in cases where they use special patterns of their own. The matching of the silks and worsteds with the fabrics requires special skill, owing to the apparent difference in the shades, as they appear in the different materials, also in the surface. Thus, a worsted that matches the cloth in color and tone, when made up into rep lace, will have a different shade than the nap on broadcloths. There will also be a difference when the cloth has a twilled face, and also in other conditions, and the skill of the man who assort the materials is taxed, to select such that will best harmonize when produced in the different materials. The harmony is preserved only when there is no striking difference in shades, and no one appeals more directly to the eye than any other one. If the lace is too strong in tone it weakens the appearance of the cloth, and if too weak, it strengthens it too much, and as so much depends upon the harmony of color and form, the trimmer and the lace maker, to meet with success must possess a natural, as well as a carefully cultivated, knowledge of colors.

The lace weaver, when matching cloths, goes through his stocks of silks and worsteds and matches them carefully. This requires special skill in selecting silks, as the bright color of the silk gives an apparent difference in the shades, and unless the right tone is chosen, the lace when made up will not meet expectation. The designing of the pattern appeals to the artistic sense of the designer, while the making of the cords is purely mechanical. As a rule two cords are used on each machine, one for the raised or front figure, the other for the flat or back. When once perfectly made, the cords will last for many years, and no after trouble is experienced in matching designs.

Carpets for fine work are mainly in plain solid colors. These are of worsted, as they give much better satisfaction than when of wool, as the well twisted threads give a better wearing surface than when made up from the softer threads. Medium grades, having small set figures in colors, are used to a considerable extent in fine vehicles, while the cheap cotton or jute carpets are decorated with a variety of large devices in colors.

All of trimming does not depend upon the cloth, style, or workmanship. These of themselves constitute the foundation, but there are other features to be considered. There are many devices which not only contribute to the comfort of the carriage rider, but to convenience as well. These consist of a variety of metallic articles, such as handles, outside and in, knobs, catches, frogs, lace holders, etc., all of which are necessities to a well-equipped carriage, and are made up more or less ornamental and are increasing in use each year. The textile fabrics, such as laces, broad and narrow, tassels, cords, fringes, etc., all play an important part. Coach laces have been in use in carriages since their earliest history. Felton, in his history published more than 100 years ago, describes them minutely, and his description holds as good for to-day as it did then, not only in their technical names and uses, but in their weave and material as well; the widths and prices, too, differing but little from those of the present day, a $2\frac{1}{2}$ inch worsted lace being quoted at 2s.; worsted and cotton, 2s. 4d., and all silk 6s. per yard. These prices differ but little from those for good qualities of lace at the present time.

For several years past our leading carriage manufacturers have been using very little broad lace and comparatively little seaming lace, although using freely of pasting lace, but indications seem to favor the introduction of the broad lace on the best work, while there has been a decided increase in the call for laces for medium grades of work. Their extended use in cheap vehicles stands as a barrier, but as these are flimsy and do not wear well, a disposition is shown to use cloth facings in place of the lace, and in that way remove them in a measure from the low-priced vehicles. All builders of fine work have their own patterns, which the lace maker will not allow to go on the general market, and as they are calling for more of these than they did last year is proof of an increased use.

The standard widths for fine laces used by first-class houses are $2\frac{1}{4}$ to $2\frac{3}{8}$ inches; those for the general market of fine grades run from $2\frac{3}{8}$ to $2\frac{1}{2}$ inches; some of the low-priced laces run as wide as $2\frac{3}{4}$ inches. The most popular are silk; that is, a silk background and worsted figures, the figures being rep. The cut laces have all gone out of use, whereas ten years ago they ruled the market. In most cases the silk background is plain weave, varied only

by straight satin stripes near each edge, or through the center. Some of the special laces have three to five alternate parallel stripes, the odd number forming the center stripe, but scroll patterns are the most popular. Very little all silk lace is used in this country. We occasionally see an imported carriage trimmed with silk lace, and some of our leaders in the fashionable world insist on having silk lace in their broughams and cabriolets, but we know of no builder who uses it except to order. The great portion of lace is woven on power looms, which reduces the cost of production. There

signs, which do not get in regular stock until the designer gives it up.

Interior fittings, such as card cases, toilet cases and receivers, bouquet holders, watch pockets, etc., are growing in popularity. They first appeared in heavy carriages, broughams, landaus, coaches, etc., but recently a call is being made for them for station wagons, rockaways, and various kinds of driving vehicles. The first movement in that direction was for plain card cases, and it has grown until it includes almost every article used in the higher priced vehicles, the latest addition being the toilet case made up on the

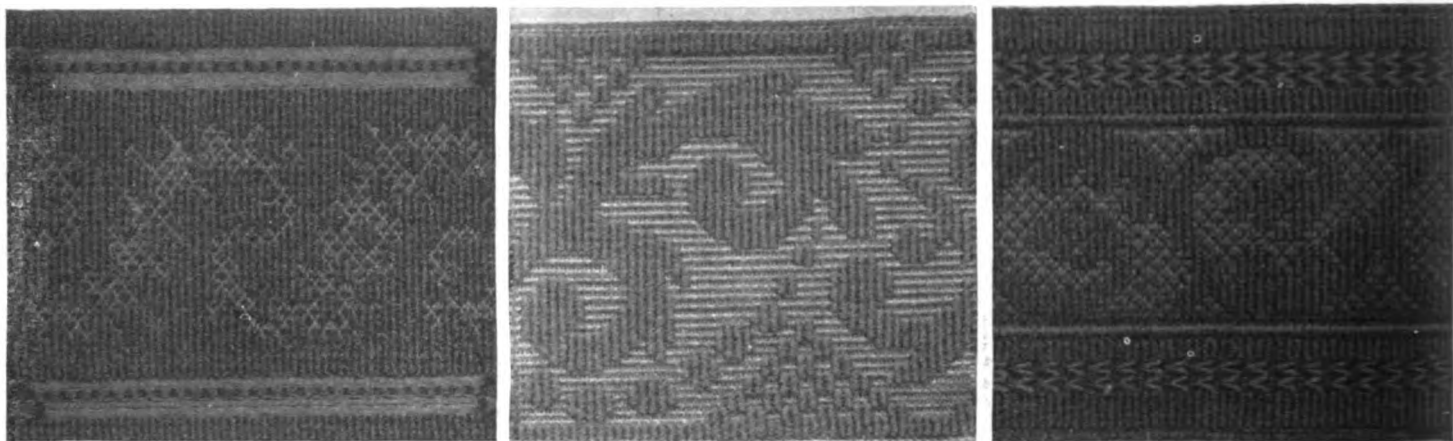


FIG. 1. THREE SAMPLES OF BROAD LACE FROM THE WORKS OF F. J. SCHMID, NEW YORK CITY.

are a few plants where hand looms only are used, and owing to cost, these are compelled to confine their product to fine laces only, making them extra firm and producing small runs of special patterns. In these the looms are much the same as they were a century ago.

Seaming and pasting laces are woven on the same looms as the broad lace, but they are generally woven with pasting lace on each edge, as this has one selvage, and two seaming strips through the center cutting into four strips often being woven, but since the falling off in the demand for seaming lace, three strips are woven at the one time, one only of which is seaming. The standard pattern for these laces is almost, if not quite, as old as the making of the lace, being diagonal cross bars. Makers of laces, who produce special designs, deviate somewhat from this pattern, but owing to the

same lines as the case for broughams. A very large number will be used this year in station wagons of the Pittsburg cutunder type, and in paneled rockaways, the cases being made to meet the lower prices of these vehicles. In one form or another these card cases, toilet cases, etc., will find their way into the general trade for other than the low-priced jobs.

The progressive manufacturer sees in the addition of these interior fittings opportunities to interest buyers without a material increase in cost. The buyer appreciates the opportunity to provide himself with these acknowledged necessities without a very great increase to the cost of his carriage, and he has a broad field from which to choose, as they are made up of fine grained woods highly polished, on hard wood covered with morocco or of celluloid. The

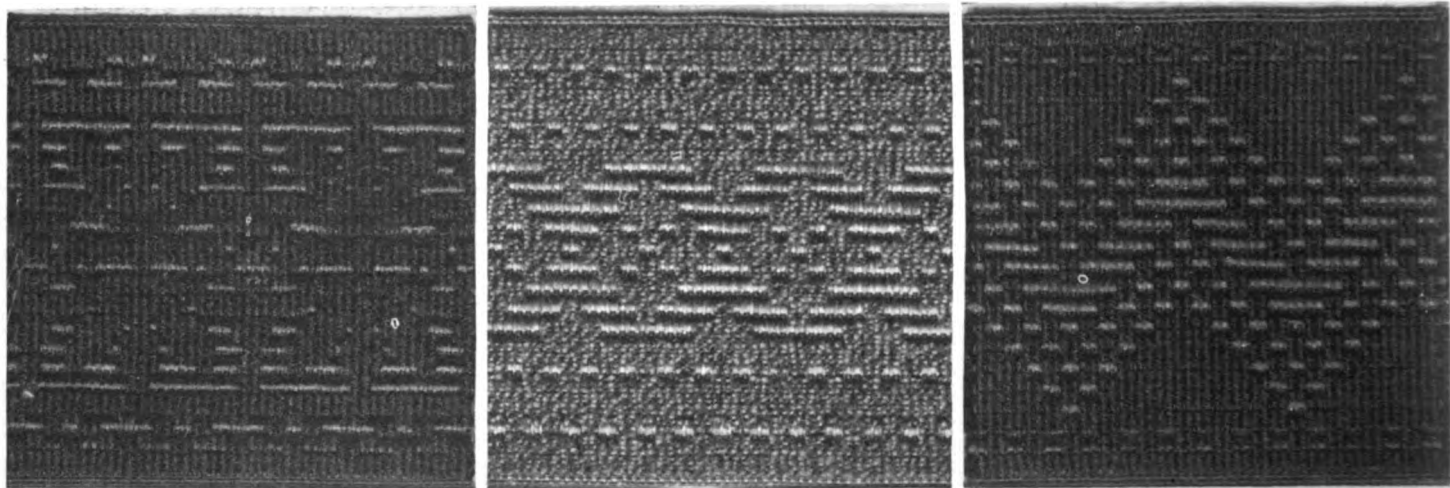


FIG. 2. THREE SPECIMENS OF BROAD LACE FROM THE WORKS OF THE SCHLEGEL MANUFACTURING CO., ROCHESTER, N. Y.

narrow width, very little opportunity is offered to show a new design, and the largest plants do not find it profitable to carry any but the old standard.

In fine laces, green, blue and maroon lead, the worsted being the dominant color in combination, the background being of silk. These combinations may have no other contrast than that between silk and worsted of the same color or with blue or green worsted and red silk background. The light colored laces are of worsted to match the cloth, and of silk a few shades lighter in color than the worsted.

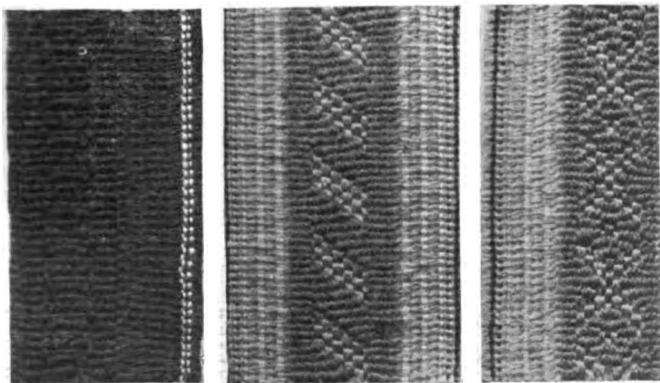
Fringes are used but little, except on canopy top work and hearses. With these, as with laces, the leading custom manufacturers have special patterns, but those who confine themselves to supplying the general market make a variety of patterns of various widths. Tassels, cords and covered knobs are made in great variety, but there are no special patterns other than those made from customers' de-

variety of patterns is sufficiently numerous to satisfy individual taste, while materials and construction make an equally broad range in prices. The watch holder has become a recognized necessity, and where the interior of the vehicle is such that no other good position is at command, the dash watch holder is provided. This is generally morocco or leather covered, and is so manufactured as to be sold at various prices. Stationary and hand mirrors are also provided without the toilet set, and are fitted into pockets of more or less elaborate character. Our illustrations show two toilet sets, the finer one being the popular pattern for private broughams. It is provided with a hand mirror, three separate pockets, perfume bottles, watch, and the necessary toilet manicure set, and writing pad. This is morocco, covered and of fine workmanship. Another toilet case is shown which is of plainer character, but is well fitted up with necessary articles without, or with a watch pocket. This is one of the

styles that are becoming popular for depot wagons, rockaways, etc. The variety of these cases and pockets in form and finish admits of their coming in more general use than heretofore, and we are pleased to note their increased use by wholesale builders of high grade vehicles, as they tend to make the carriage more and more pleasurable.

The cloths in the general market comprise the same lines as those that have been in use for several years, but their positions have changed. The whipcords which were at one time the pronounced leaders have lost much of their popularity owing to their extended use by builders of cheap vehicles. To reach this, trade prices had to be reduced to a very low figure, and it is now possible to use them on the lowest priced work. True the cheap cords are wholly of cotton, but they serve their purpose and give to builders of low grades of work an opportunity to imitate the better grades.

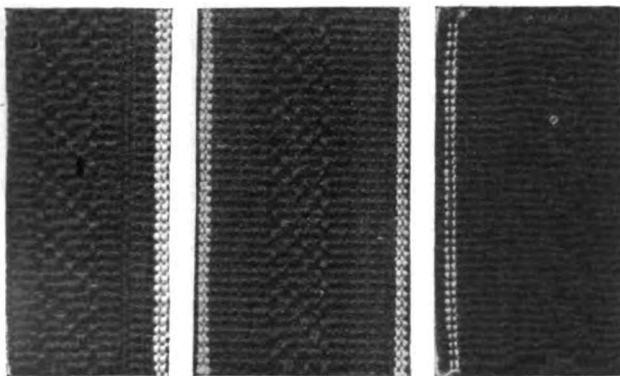
Leaders are not all agreed as to the future of whipcords. Some have dropped them entirely, except on traps, breaks and a few spe-



PASTING AND SEAMING LACES.

cialties, such as covert carts, morning carts, etc.; others adhere to them for the regular lines as well as for specialties, but all these use nothing but the high grade worsted, luster, whipcords of 20 oz. and upward, and which cost from \$2.50 to \$3.50 a yard. These will keep whipcords before the public, as they do possess special merit. Bedford cords, which for a time were relegated to a second place, are now among the leaders for tandem carts and cabriolets without tops, the wide wall on two wheelers and breaks, and the narrow on other kinds of vehicles.

When whipcords were first brought out, they were fine all wool or worsted fabrics, and being in neutral shades they were quickly accepted as a most timely material for no top vehicles. Their fitness was so apparent that they were sought after by manufacturers of lower grades, and each season since their introduction their quality has been reduced until now the great bulk in the market rank among

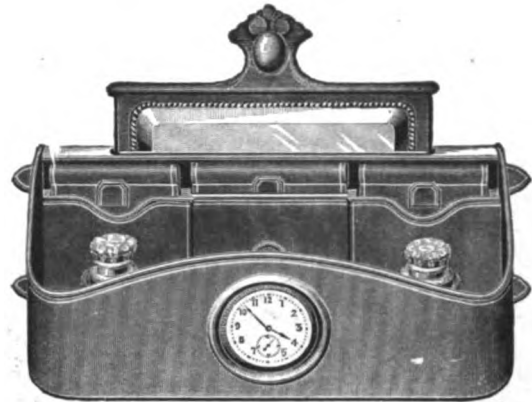


PASTING AND SEAMING LACES.

the cheapest cloths used for carriage trimming. The change in quality has made it the most sought-after of the low priced cloths for the cheapest carriages made.

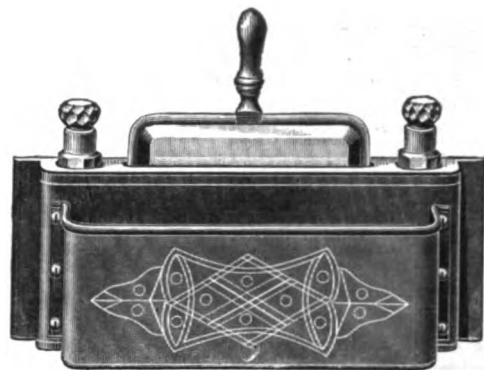
Bedford cords will be used to a much larger extent than heretofore. There are several sizes of wales, two of which are designated as standard, the "standard wide" and the "standard narrow." These are illustrated herewith, showing actual width of wales; other illustrations show the wide, and two fabrics which, for want of a better name, are called whipcords. The light cord has something of the appearance of Bedford cord, but the weave bears a closer resemblance to the whipcord. Another line of cloths is designated covert

cloths. These have a light nap surface, but a different weave than broadcloths. These are furnished in a variety of pleasing colors and shades, which makes them a most desirable line for morning carts and other light class of vehicles for ladies' use.



BROUGHAM TOILET CASE, FROM ENGLISH & MERSICK, NEW HAVEN, CONN.

Cloths, those having a nap surface, have grown in favor, the finer quality driving out much of the morocco from many places where it has been a favorite material for a number of years, and have made a sad inroad in the exclusive field of high grade family carriages. This result is due to the objections raised against leather, because of its damaging in many cases the finer fabrics on ladies' costumes, and the further objection, its coldness in winter. It is an established rule among leading builders to use cloths or goat skins only for pleasure carriages having standing or bow tops. When this is deviated from it is likely to be by order of the buyer. The cloths used for the interior run from nineteen to twenty ounces:



STATION WAGON TOILET CASE, FROM ENGLISH & MERSICK, NEW HAVEN, CONN.

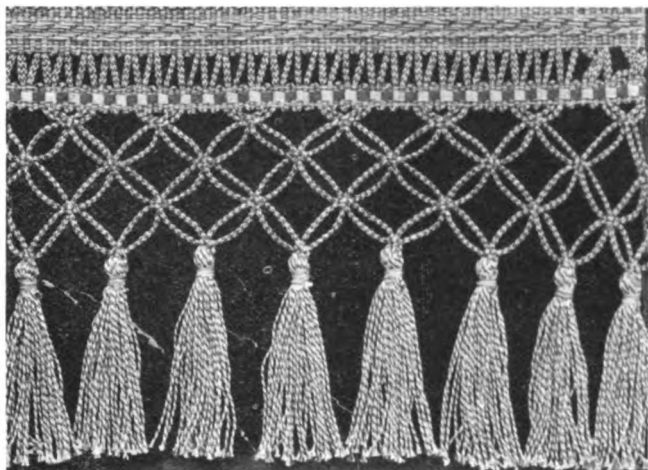
for outside seats two to four ounces heavier, the lighter weights giving far better results, as they can be worked to full squabs more readily than the heavy and have sufficient body to insure richness of appearance and durability. The outside seats, being trimmed flat, heavier cloths can be used. The goat skin or morocco used is finished "pebble," or with a luster like burnished kid. It is a soft material, but is liable to show a cracked surface on use. Cloths are made of a standard width, viz., fifty-four inches, and in weights from twenty-six ounces down to five, from wool, worsted, shoddy, cotton, and mixtures of these, making the range almost unlimited. The predominating colors in nap cloths are green, maroon and blue in a variety of shades. Drabs, which were once so popular, are used but little, except to order. Maroon is the most expensive, all other conditions being equal, and the market supply is the lightest. The charge that maroon will not hold its color is no longer good, as it is now one of the most reliable.

A noticeable feature, and one that is attracting attention, is the use of black cloth. As yet it has not been employed on other carriages than cabriolets and Victorias, but cloth manufacturers report orders for it from large cities East and West. These orders are for the finest quality, and it is possible that landaus, if not broughams, will be trimmed in black cloth this season.

In all probability there never was a time when the variety of trimming fabrics was as great as it is to-day, either in color or kind, nor was the art of making carriage cloth so well understood. This latter fact should be recognized by carriage builders more than it is. If it were, we would hear less complaints about faded trimmings and disappointments would be less frequent over the wear. Carriage cloths and clothing cloths have different weaves, and the latter

should never be used in carriages, no matter how pleasing the appearance of the cloth in the piece. Unless the buyer is a competent judge as to qualities of cloths, it will be well to leave much to the carriage cloth merchant and hold him responsible for its fulfillment of his recommendation. There are many large cloth houses that make a few kinds of carriage cloths. So far as the latter go their stock will prove to be as recommended, but for other lines they cannot be relied upon.

The leading carriage cloth houses each bring out specialties yearly, and their thorough knowledge of the wants of the trade make them competent guides for the carriage builder, so that even the new

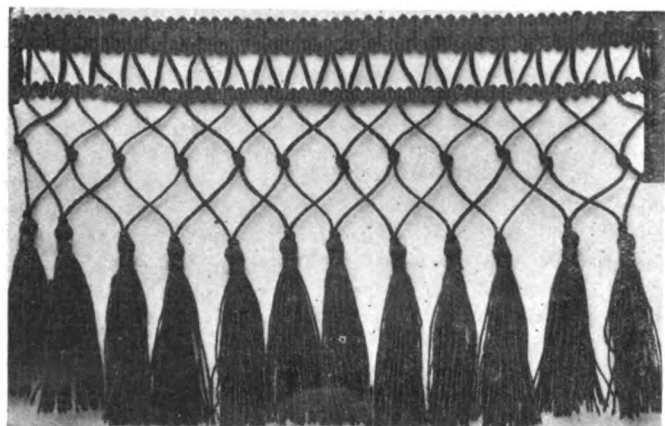


MIXED GRAY FRINGE, FROM THE SCHLEGEL MANUFACTURING CO., ROCHESTER, N. Y.

goods do not need testing to satisfy the buyer of their utility. While adhering to the general rules as to character of cloths, most, if not all, of our leading carriage builders have their supplies of fine cloths made to order, of weight, color and quality to meet the individual demand of their house.

The great improvement made in the manufacture of carriage cloths by American cloth mills has made "domestics" close competitors with the best imported, and there are leading houses that use very little of the imported, other than Bedford cords. While there are others who use imported cloths to the extent of 80 per cent. of the total consumption, and as each hold a relative high rank, it is presumptive evidence of the equality of the domestic and imported.

Prices of cloths remain about as they were last year, the high grades showing no change whatever, while the lower grades show an apparent change in some kinds, but the change is only apparent, as the quality is reduced by the employment of cotton, a point which seems to give force to a woolen manufacturer's statement that

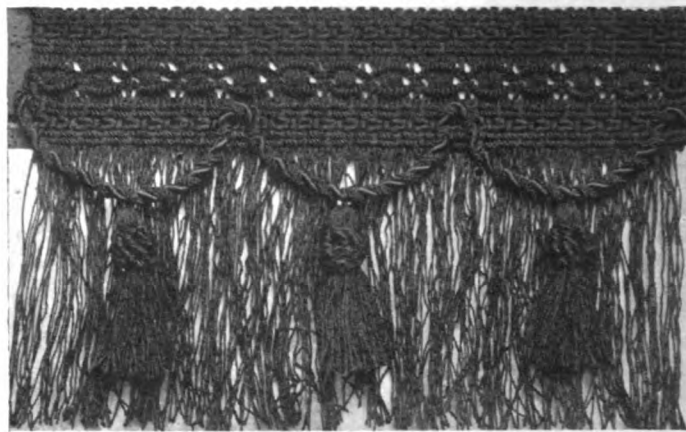


BLACK WORSTED FRINGE, FROM THE SCHLEGEL MANUFACTURING CO., ROCHESTER, N. Y.

"there will never be a scarcity of wool so long as cotton is grown."

To make use of trimmings so as to obtain the best effects, a close study of the various styles of vehicles is necessary, but unfortunately this is overlooked, and too often a fine fabric is used simply because of its quality, where the latter feature is entirely negated by the unfitness of the place on the combination. The man who has given the subject careful study sees the fitness of materials for specific uses, and accordingly selects so as to obtain the best results. If he

is trimming top buggies, he will be most likely to select cloths, the colors to be determined by the color of the paint. If the standard one-man road wagon is to be trimmed, he may depart so much from the rule as to select a fine twilled surfaced cloth, but will not so far encroach upon good taste as to use a whipcord or Bedford. If the vehicle is a runabout or other no top buggy, he will give preference to cords. For the best it will be fine Bedford or some of the twilled goods, as these best withstand the effects of the elements, to which they are exposed at all times, there being no top to protect them. If the vehicle to be trimmed is half top work, such as the cabriolet or Victoria, or the class of top work having large tops, such as Stanhope phaetons, spiders, mail phaetons, etc., he will select cloth. He may use morocco for rear seat cushions and squares, but will line the top with cloth. If for station wagons, coupé rockaways, extension top phaetons, he will use cloth to the exclusion of any other materials. For broughams, landaus, coaches and other carriages, the tops to which are permanent, as in broughams, or adjustable, as in landaus, he will either select cloth or morocco. The latter has been given the preference for several years past for broughams, but there is a growing opposition to the leather, because of its liability to soil the finer fabrics of a lady's costume, and in looking through this season's carriages, we find that this opposition has been felt, as a much greater percentage is trimmed with cloth than was the case last year, a result due in great part to the protests of the ladies, a change which we think is for the better, for no matter how fine the morocco or how skillful the work of the trimmer, the morocco imparts a cold appearance and suggests utility rather than comfort, and as the



SILK FRINGE, WITH CORD AND TASSELS, FROM THE SCHLEGEL MANUFACTURING CO., ROCHESTER, N. Y.

surface of the leather becomes smooth by wear, the seating is rendered uncomfortable by the riders sliding on the cushions.

If the sporting class of vehicles and driving carts are to be trimmed, the range is broadened for the employment of materials, but Bedford cord standard coarse for the heavier vehicles and coarse for the lighter. The better grades of whipcord will continue to be used on this class of vehicle, these cords and pig skin being the standard materials. The little morning cart is one of the new classes of vehicles that is gaining rapidly in popularity; for it the fancy fabrics are a necessity, as nap cloths appear too heavy and sombre. Lightness in appearance is an essential feature, and heavy colors or patterns in trimming contribute to deprive the carriage of this essential feature. When neutral or light colors are called for, the fabric should be the "standard fine" or the fine wale Bedford. Nothing now in the market can take its place, but when other colors are required, recourse must be had to cloths with twilled surfaces, or the diagonal cord. Whipcord, which is furnished in colors, mainly green, blue and maroon. Some of the new shades, such as cadet blue and subdued chrome green, are specially adapted to these little vehicles. There is a freshness to these colors that harmonize beautifully with the general character of the vehicle. Many of the manufacturers of low-priced vehicles claim that they cannot adhere to any standard rules as to the selections of colors, and that, while they may build hundreds of buggies to one pattern and paint all alike, they are compelled to trim with blue, green, gray, brown, as many buyers, after having selected the kind of vehicle they require, immediately look to the trimming, and they select a favorite color of cloth, no matter what the color of the paint. This may and does undoubtedly hold good to a greater or lesser extent with the buyers of low-priced vehicles, but even if it does, it does not excuse the

manufacturer for selling such illy finished vehicles. There are colors that harmonize by contrast as well as by concord, and the various vehicles can be painted accordingly so that all the onus does not rest on the trimmer.

The trimmer's skill and artistic taste is taxed when he comes to select the design for squabbing. This is particularly the case when using Bedford and other heavy cords. If an attempt is made to put them up to a full biscuit or diamond squab, the result will be a failure, as the heavy cords running in one direction prevent the making of a good job. These are best placed when the plain cushion or squab is used or with the flat biscuit.

We throw out this hint to the trimmer, although the object of this article is to treat of the goods and their uses, not the methods of workmanship, and we have endeavored to relate the conditions as we find them. There is no absolute standard as to colors and the employment of fancy cloths, but the builder may with safety follow our directions if he will keep in mind the importance of harmony of color and character of vehicle. He can safely trim an opera coach with light cloth, but the omnibus, which is built upon much the same lines as the opera coach, should be trimmed with leather, not fine glazed goat skin. We mention this to enforce the necessity of a careful study on the part of the trimmer, of the peculiarity of the goods he is to use, and the vehicles to be trimmed. There can be no excuse for failure in these respects, and when failure does occur, it is either the result of ignorance or carelessness.

The laces shown in Fig. 1 represent three popular styles produced direct from samples furnished us by F. J. Schmid, of New York City. These were hand woven and of a fine quality. The one on the left is of blue silk and worsted, the stripes on the edges and the light background show the silk portions. The center piece is drab silk and worsted, the figure being in worsted, the background silk. The lace on the right is of blue silk and worsted. These are also made in other colors, but follow the same course in matching the silk and worsted strip. Fig. 2 shows three popular styles from the works of The Schlegel Manufacturing Co., Rochester, N. Y. These two are fine laces. The one shown on the left is a blue silk and worsted lace. The silk is shown by the high lights. The main figures are the groups of leaves in worsted. The illustration does not do full justice to this pattern. The central pattern is a mixed gray worsted and drab silk, the silk being shown by the high light strips. the silk being the background, but its light color makes it appear as if in the foreground. The sample on the right is of black worsted and bright red silk, the silk forming the background, which is shown in the print by the high lights.

The reproductions of pasting and seaming laces show patterns from the houses that furnished the broad lace. The three illustrations of fringes are furnished by The Schlegel Manufacturing Co., of Rochester, N. Y.

THE CHEAPEST METAL.

ALUMINUM is, at the present price, the cheapest metal in the market, with the exception of iron, zinc and lead, says the *Electrical Review*, London. This metal is now extensively used in place of copper, brass, tin, and in some cases even iron, especially where the reduction of dead weight is a question of great importance. Aluminum is also beginning to be very largely used in connection with electricity, as electrical conductors on this metal, giving the same conductance as copper, weigh only half as much, and cost less. It is impossible to foresee the ultimate extent of the use to which this metal can be put, but the progress made in aluminum during late years justifies the most sanguine expectations. Twenty years ago the total output in the world did not exceed four or five tons, and its price was about \$30,000 per ton; ten years ago its price was reduced to about \$10,000 per ton, the output increased to about thirty tons per annum; now the price is from \$650 to \$700 per ton, and the output during the past twelve months is reckoned at 5,000 tons.

GOOD CHEER.

Have you had a kindness shown?

Pass it on.

'Twas not given for you alone—

Pass it on.

Let it travel down the years,

Let it wipe another's tears,

Till in heaven the deed appears.

Pass it on.

THE PHILIPPINE CARRIAGE MARKET.

OPENING FOR AMERICAN MANUFACTURERS.

THE Philippine market is a new one for American manufacturers of carriages, and promises to be extensive. Since American occupation there have been many important deals made for the placing of stocks of carriages and wagons in the islands, and in nearly every instance the experiment has proven very profitable. Previous to the occupation of the islands by the Americans, the demand for American vehicles was very slight. In fact, hardly an American-made vehicle was sold here during the year. The Spanish shipped large numbers of carriages and wagons here, as did the Germans. Japan also furnished certain types of vehicles for the Philippine market, while England also tried to secure a share of the Filipino trade. Recently, however, there has been a very active call for carriages and wagons of American manufacture. The types of vehicles which have been shipped here by the Americans are far superior in mechanism, design and general build to the vehicles which have been



NATIVE TURNOUT.

supplied to the country during the past forty or fifty years. Your correspondent has been here more than a year, and during this period has visited all of the important islands of the Philippine group. In rare instances new vehicles from Spain or the older nations are seen, whereas the products of the American shops are in evidence everywhere.

One reason why the American manufacturers of carriages did not cater to the trade in the Philippines previous to the war was that the Spanish placed very high rates of duty on imported vehicles, so much so that it was impossible for American carriage manufacturers to compete. Rather than pay the excessive duties, they refrained from sending vehicles to the islands. Now that these duties have been removed entirely or reduced to a reasonable basis, the Americans are becoming encouraged, and are sending some very fine specimens of vehicles here. The demand for depot wagons is very active, as many of these vehicles are required by the business men of the country. There have been systems of posts established, and this form of wagon would be useful for the mail and package carriers. The ordinary form of wagon now used is too heavy, and the couriers are delayed in getting over the roads, unless they change draft animals frequently. There are additional posts being established constantly, and more of these depot wagons are needed than can be supplied from the stocks in store. There are now about 400 of the posts in existence, and possibly there will be 1,000 soon. Runabouts are also in demand both from the Filipinos, army people and the foreigners in the country. The heavy, awkward forms of vehicles shipped here for general service by the Spanish carriage makers are being substituted by the lighter road carriages and wagons, much to the benefit of the draft animals of the country, all of which have been overworked on the heavy teams of the past. Runabouts are very useful to the officers stationed at the military posts, for the purposes of transporting packages and mail quickly from one point to another, also for carrying personal property. There are a few runabouts in service in the country at the present time, but there is room for the disposal of many more. Not only the army people and the business men require this form of vehicle, but the richer classes of Filipinos also buy them. I have visited the stables of some of the well-to-do Filipino planters or sugar manufacturers and been surprised at the variety and beauty of the

vehicles owned by them. In one stable I entered I noticed fully ten vehicles of different pattern, all in good order and in condition for service for one man. Surreys are also in request, and many of these vehicles have been disposed of to the trade during the past few months. The writer remembers that upon first arrival here hardly a surrey could be seen in service, and now they are in service everywhere.

The Spanish and Filipinos of the islands have some peculiar ideas concerning the design of vehicles, and they are constantly on the look out for new patterns. However, their choice as a rule is limited to the stocks of vehicles carried by the local dealers, and they must purchase these. At the same time, very many of the Filipinos and Spanish with whom I conversed on the subject were highly pleased with the illustrated books on different styles and types of



PHILIPPINE SCENE, BULL CART IN BACKGROUND.

carriages and wagons I showed them, and each person had his particular choice. The inclination seemed to be to select the fancy types of vehicles in preference to the plain and substantial sorts. The Filipino idea runs to the attractive and unique. Speaking broadly, the style and design of the average vehicles of the country are very much like the American types, and this is not to be wondered at when it is known that the American vehicles have been used as models for the Spanish and Filipino manufacturers for years past.

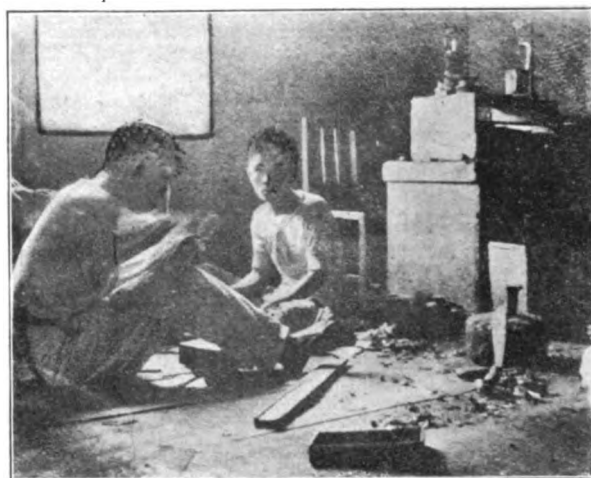
The reader should not labor under the idea that the Filipinos have never done anything toward making vehicles of a high grade type. Some may suppose that the carriage and wagon smiths of the country have for years built crude draft carts and heavy wagons and crude carriages. The truth is that the ingenious Filipino smiths have managed to build some forms of phaetons, buggies and cabriolets on practically the same lines as employed in American shops, so far as the construction and design of the vehicle is concerned. The difference exists in the cruder form of building, due to lack of machinery and tools. There are no well-equipped carriage shops in the Philippines, but I have seen Filipino workmen turn out samples of carriages which can be passed for American models. They do this in the following manner: They first secure a full-sized and complete American vehicle of the type to be built and proceed to carefully construct each part from measurements made from the finished vehicle. Months may be spent in the work, and perhaps only one or two workmen are engaged, but in course of time the vehicle begins to take shape in exact representation of the American model. Each part is formed precisely like the model. Often there are long delays waiting for the construction of some part. But time is nothing with the native smiths. I have seen them put in a whole day on shaping one bolt. They smoke and chat while working. They are careful not to get too deeply complicated in the patterning of the vehicle, and take pains to replace each part as soon as the new one is finished. Then the model is always kept in complete order, the part to be made being removed and then again replaced after the portion is finished. In many instances the smiths of one town will use a model between them. Often a month or two is consumed in the construction of the simplest form of vehicles, while I have seen some of the high class Spanish types occupy the labor of smiths six to seven months in duplicating.

One of the worst features of the carriage and wagon business in the Philippines is that low prices must prevail for nearly all of the vehicles, in order that ready sales can be effected. The Spanish,

Filipinos, and many other classes of foreigners are not wealthy as a whole, the exceptions being the sugar men, the miners, the tobacco people, and the manufacturers of native textiles and oils. The result is that the masses of people demand low-priced vehicles, and Spain has been able to cater to this trade with perfection, for some of the vehicles sent here are not only extremely low in price, but are very inferior in construction and finish. The American population, however, purchase the better styles of vehicles, and the legitimate carriage trade depends largely upon them and upon the army for the purchasing of the higher cost carriages and wagons. The low grade stock from the apprentice shops of Spain should not be permitted to come into the islands. The writer has had the misfortune to ride across country in these cheap vehicles, and about every mile something breaks, and repairs have to be made all along the line.

As hinted before, there are those in the islands who are making fortunes in the rice, tobacco and sugar crops, and these persons do not hesitate to invest liberal prices in the higher grades of turnouts. I have seen mine owners and native planters scrutinize catalogues of carriage makers with a view of purchasing the highest cost and most elaborate carriages on the list. It would be a most excellent idea for the carriage trade of America to establish an agency in Manila and Iloilo in which to keep illustrated and descriptive catalogues of high-class turnouts for these wealthy classes of the islands. Spanish catalogues are in abundance, but the natives have learned not to put much dependence upon these illustrated affairs, for the reason that time and time again the shipper of the vehicle has failed to send an article anywhere near the illustrated one. Often the finely pictured and colored vehicles in the cuts are really representing the most inferior of cheap stock, and the disappointment of the purchaser when he receives the carriage or wagon is very great. Thus he is taught to abhor Spanish catalogues. There is confidence in American catalogues, for I have known many cases in which the ordered vehicle has proven itself to the native purchaser to be precisely what was advertised.

The future trade in the carriage and wagon markets of the Philippine archipelago depends very much upon the attitude of the manufacturers. So long as the time is permitted to drag along without the establishment of means here by which the Filipinos and others can place their orders for American vehicles, just so long will the Americans fail to secure the Philippine business. The Americans have a good name here for carriage and wagon making, and it now remains only to have means for the selling of the vehicles properly. There are no large stores such as we find in New York and other places in which new forms of vehicles can be placed in the show



PHILIPPINE CARRIAGE SMITHS.

windows. Neither are there any regularly established agencies here for handling vehicles exclusively, although a number of agents are here looking over the field for the purpose of putting in stocks of automobiles and bicycles. The bicycle folks have had a footing here for several months, and their agents are doing a fine business, as all sales are cash, and owing to the cost of getting the machines here, the prices are necessarily high. The automobile people have already disposed of some horseless vehicles to operate by the petroleum oils of the islands. These vehicles attract the attention of the higher classes, and quite a number may be seen on the streets. But the staple carriage and wagon builders seem to have neglected arranging for any definite market. There are the few scattering stores

in which hardware and sewing machines are sold, the proprietors of which are attempting to handle orders for vehicles, and also the smiths are doing something in the line. Some typewriter supply concerns are also advertising vehicles of American make for sale. I also observed in Manila and in Iloilo signs in the mining and wood-working machinery stores to the effect that orders would be taken for American vehicles. I was informed by the clerks in these houses that they frequently secured orders. Dealers in kodaks, and even the plumbers are handling vehicles. But all of this is done through circulars. I saw lots of fine pictures of vehicles in the stores, but not one sample vehicle.

There is a very good opening here for wire wheeled vehicles, for the reason that the conditions of the new roads of the Philippines are adaptable to this class of rolling stock. The present traffic is mostly on ordinary wood and tired wheels, some of which are of native construction and quite crude. The custom is for the natives to shape the parts of the wheel by hand and spring the pieces into position by using considerable force. The tire is then shrunk on and some pins inserted to aid in holding it in place. This makes a heavy and somewhat awkward wheel. The light smooth running wire wheels with rubber tires would sell very well in these islands. The Filipino is always on the lookout for improvement in carriages and wagons, and he would not delay long in adopting the light wire wheels. There are already some of the wire wheels in service on the light army wagons, which are used for carrying official packages only, for the reason that with change of draft animals these light wagons can be drawn rapidly through sections occupied by army posts. The passage of these wire wheeled vehicles always creates interest among the natives, and I know of many who are desirous of placing orders for the same as soon as they learn with whom to place order and money. The authorities are now putting in road beds throughout all of the lines of highways in the islands that are particularly adaptable for wire wheel service.

Solid tires are also in request here, and it may surprise some to have it announced that a number of the carriage people on Panay Island have located gutta percha trees and are securing gum rubber from these for the making of tires, which they place on wheels. The gum is secured from the inner bark of the Panay trees, and is treated by the natives in such way that a rubber is obtained which is suitable for use for making the tires. The gum is reduced to the proper melting point in kettles, and is cast in pipes to the proper diameter. The wheel is then fitted with a wood tire, properly grooved, and in this groove the tire is placed, and the butts closed with wire sewings. I have seen numbers of vehicles fitted with these home-made "rubber" solid tires, and they roll over the roads smoothly and easily.

"PHILIPPINES."

TO GET WIRE THROUGH OLD RUBBER TIRES.

A CORRESPONDENT asks, "How can I get wires through old rubber tires when making repairs?" An expert in this line gives the following simple method: Procure an air pump; the ordinary foot pump used for inflating tires will answer, if nothing better can be had. Screw into the end of the pipe a small nozzle; insert this nozzle in the wire hole at one end and pump air in the wire hole. The far end need not be closed, but it is probable that the work could be done more quickly by doing so than by leaving it open. The air forced in will sufficiently inflate the tire to allow the wire to be moved freely, the expansion remaining long enough after the pump is removed to allow for the forcing the wires into the desired place.

THE ROTTEN NUT.

"Thou little false deceitful thing
Who took the trouble thee to bring
From Barcelona's land?

"For with thy smooth and glossy shell
Not e'en a judge of nuts could tell
Thy rottenness within.

"And so some men their looks belie,
And spend their lives in vain to try
To seem what they are not.

"But days of trial come, and then
We see they want the souls of men,
And are but empty shells."

Dealers' Department.

CATALOGUE HOUSES.

ADDRESS by James McPhail, of Langdon, N. Dak., at the second annual meeting of the North Dakota and Northwestern Minnesota Implement Dealers' Convention.

"Mr. President and Gentlemen: The catalogue house to all appearances is with us to stay, and the business of catalogue houses would seem to be increasing rather than diminishing. That they are becoming more aggressive each year, is evidenced by the fact that some of them are now either manufacturing directly, or control the output of factories which manufacture various lines of goods. For years the retail dealers have raised their voices, in and out of conventions, against them. Methods for their suppression have been discussed by all organizations similar to our own, but yet the fact remains, "we have the catalogue," and its volume of business increases. Now those facts must go to show that they fill a place in the business of the country which is necessary, or made necessary by the methods of their competitors—the wholesaler and the retailer. For we must not lose sight of the fact that goods supplied by catalogue houses direct to the consumer decrease the business of both the wholesaler and his supporter, the retail dealer, to the amount of those sales, but do not affect the manufacturer. Now we have said that the very fact of the increase of business of catalogue houses, in the face of continual opposition from the retailer must show that they fill a place in trade relations between the manufacturer or producer and the consumer, which either through the methods of the producer or manufacturer or the retail dealer, is made necessary. If such is the case, we must look for the cause or causes which produce those results. If we start with the manufacturer or producer we find that his business is dependent for success on getting his goods into the hands of the consumer. All who deal in or handle goods between the manufacturer and consumer, are simply links in the chain connecting "supply and demand." If this be the case, let us review the methods by which the products of the manufacturer reach the consumer in each case, and possibly we may be able to shorten the connection. There can be no question of right of the catalogue house selling its goods at the lowest price it can to the consumer, and while in some cases the retail dealer can honestly and truthfully meet the question of his price as compared with the catalogue house price, by the assertion that the goods of the latter are of inferior quality to his, yet in many cases it is not correct. While we, in the implement trade, could in the majority of cases substantiate this fact beyond a doubt, yet there are some standard goods in our line which many of us carry, on which the catalogue houses quote a lower price than we pay for the same goods to the wholesale dealer or jobber in the quantity which we find sufficient for the demands of our trade. In many other lines, and particularly in the hardware line, in which many of the implement dealers are also interested, the catalogue house price is usually as low, and in some cases lower than the wholesaler from whom we buy charges for goods of the same quality; now as such is the case, and as we acknowledge that the catalogue house business is increasing, their promoters taking up the manufacture of carriages and wagons and other goods for their establishments, we have every reason to anticipate a greater competition from them in the near future. But, to take up the methods of each and trace the goods from manufacturer to consumer, we will first take up the catalogue house method. They buy in large quantities, direct from the manufacturer, on short date of payment or for cash, and in this way secure their stock at manufacturer's prices, then sell direct to the consumer for cash and in many instances, no doubt, cash in advance. In this way the consumer is brought as near to the manufacturer as it is possible to place him. Now, for the process through which similar goods pass from the manufacturer to the consumer through the retail dealer. We find the manufacturer disposes of his goods to the jobber, who, we will suppose, gets as good a price as the catalogue house. But there is and must be a considerable advance charged for those goods by the jobber to cover the expenses, pay liberal salaries and make the profit which creates the wealth of the jobbers or wholesaler, so that the price of the retail dealer must be advanced from 10 to 25 per cent. to cover these contingencies. And right here is where we are handicapped in our competition with the catalogue house; our goods

cost us practically the same price as the catalogue house can sell for. Yet we have to carry those goods till disposed of and make a profit sufficient to cover all expenses of our business and something for ourselves. It is, therefore, apparent that the method, or chain, connecting the consumer and manufacturer is at least one link too long. But how are we to overcome this, and it seems to me that it must be overcome. We must all realize that it is "a survival of the fittest" in this world, and that if we can't compete we must be forced out or under; therefore, we must look for ways and means before it is too late. The growth of the jobbing business in farm implements may be traced back about twenty years, and was brought about largely by the development of the West and Northwest. Prior to that time the manufacturer largely placed their goods direct with the retail dealer, and in fact the connection between manufacturer and consumer was usually direct, as the manufacturer appointed his agent, paid him salary or commission, and this agent sold direct to the consumer. But with the rapid and really unexpected growth of the West and Northwest, new territory opened rapidly, shipping and transportation facilities were poor, and to come nearer the consumer the manufacturer located his agents in the trade centers. Those agencies were all right, so long as their existence only increased the cost of goods to the amount of their actual expenses and salary. But the demand for assortments of goods (mixed car lots), converted the manufacturers' agent into a jobber, who now expects a profit over and above the expense of transferring and handling goods; and this profit is just as much as can be worked out of the retailer. But, as is clearly evident to the observer, it is sufficient to place the retailer on a very unequal footing with the catalogue house. Since the apparent necessity for and the creation of manufacturers' agents, back some twenty years ago, and their later development into jobbers and wholesalers, conditions have materially changed. Transportation facilities have improved; the telegraph and telephone have practically annihilated the distance between the manufacturing centers and the consumer. The retail dealer of to-day is in a vastly different position from the dealer of twenty, or even ten years ago. He is to-day, by reason of improved transportation and communication, nearer the manufacturing centers than he was twenty years ago, to the now large jobbing centers. I have no wish to be construed as antagonistic to the jobbers; personally and collectively we have many warm friends among them (it may be that this friendship is not in all cases disinterested), but I have to treat this subject from actual facts, as they appear to me. We have now reviewed the method by which the goods pass from manufacturer to consumer, as the stream passes along from its fountain head till lost in the ocean, and also the causes which have led up to the method of passage; and it may be as well for us to consider, if we can by any legitimate method improve the existing conditions. I think we can. First, the co-operation of the jobbers and manufacturers should be solicited, and an effort made to reduce the cost or expense now existing in passage of goods to the retailer. Failing in this, co-operative buying, or buying in large quantities direct from manufacturers, might be tried. To accomplish this would necessitate, no doubt, a change in our business methods; as cash or short dates on goods could only be expected to succeed in this way. I have now taken up considerable of your time. If I have failed to bring out the facts in the case, I trust that I have at least advanced ideas which may cause discussion, as the subject is one of vital and increasing interest to our association."

THE CREDIT MAN AND HIS RELATION TO HIS CUSTOMER AND SOCIETY.

PHILIP PRESENT.

The successful credit man must be a student of human nature, which, indeed, is a study worthy of all classes of men. As has been well said, "The greatest study of mankind is man." If we study the evolution of man from the low state of savagery to barbarism, from barbarism to civilization, and from civilization to the present enlightenment, we find that every state of advancement was gained through confidence. As confidence among men increases they take a higher step in the evolution of human progress. The savages had no faith, no confidence in one another—not even in the members of their own families. However, they learned, after due time, to form clans, then tribes, because they found it advantageous to trust one another, but had no confidence in those outside. Little by little, as time went on, and by the law of self-preservation, they learned to spread confidence, they founded nations which in time became

civilized, and formed laws to govern themselves with confidence in their fulfillment. Now, in every stage of human development there are economic, industrial and social problems which multiply with the growth of population, and are solved by the increase of confidence born of education and culture.

Now, what is credit, if not the confidence we have in those we trust. Business is founded and developed through confidence. As credit men we must have confidence in the salesmen, of the house we represent, in mercantile agencies, and in our customers. We have outgrown the lower order of business methods, when a merchant would do all in his power to avoid meeting his competitor, and would not think of exchanging trade inquiries (thereby revealing the name of his customer), and the era of mutual confidence among business men has not arrived a moment too soon. In former times merchants considered their competitors enemies, and, naturally, had no confidence in one another. Enlightenment opened the eyes of many of them to the necessity of mutual help and protection to be gained only through organization, and thus came into existence the National Association of Credit Men.

Our aim and object is to weed out of commercial life those whom we find have betrayed our confidence. We can accomplish our task only through educational efforts and co-operation. We are depending entirely too much on the law for good results. The admonition, "spare the rod and spoil the child," may have been justifiable in Solomon's day, when the clogged intellect had to be reached through pain inflicted on the body, but what teacher of morals and ethics would now hope to elevate the character of a child through the application of the rod only. What the whip is to the child, the law is to man. We cannot as yet dispense with law, but we find that it does not prove itself to be the purifier of man or the uplifter of morals.

Men will stretch their consciences to commit injustice to their fellow men simply because it is lawful, or if they think they can escape the clutches of the law. Society often sanctions such depraved acts. Both by education and appeals to the conscience of men let us point out the degradation and shame to which the abuse of confidence will subject them. Let them be regarded as moral lepers, betrayers and outcasts. As has been said before, we can accomplish this by co-operation. We must not be selfish, receiving and giving nothing in return. Our association meetings should be well attended, all taking part in the proceedings, thus widening the scope of our work for the benefit of all.

Credit men should be on the most intimate terms possible with their customers. Get his confidence and you will learn more of your customer's frailties, capabilities, morals, intellectual and financial condition than you could ever get from his written statement. Suggest some improvements in his business if desirable, infuse character, strengthen his weakness, show him you are interested in his welfare.

Literature on the subject of confidence should be well distributed. It is a considerable undertaking, but the world advances only through sacrifice. The progress of civilization has been marked by different periods of development—the age of war, the religious age, the age of philosophy, art and science. We are now in the age of commerce. What the warriors, preachers, philosophers and scientists did for their ages we must do for ours. No class of men is to-day more respected than the commercial class, none better qualified than the credit men to make this an age of honor and integrity through the efforts of education. Every act of life is either a debit or a credit to our account. If we follow the law of balance we must recognize that we receive from society our moral and intellectual training, and the qualities—the individuality of which we may boast in after years, is really in a measure at least, the outcome of the training and influence of our parents in youth. Many of us forget that the greater our gifts are, the greater the debt we owe, and we must make our contribution to the common good even a little over the ordinary measure, so that the world will be our debtor, thereby realizing the ideal of the true credit man.

CERTAIN CAUSE FOR FAILURE.

The principal reason so many people fail in business is because they are too infernal lazy to succeed, says the *Merchants' Journal*. They would like to succeed and wish they could succeed, but they haven't sufficient energy to get up and hump and keep humping till they get there. They haven't enough energy to learn how to do anything real well. They never master any trade or business, and when it comes right down to it, they are only capable of doing something

under the direction of a boss. There is a great demand for energetic people, who know how to do something and do it right. Half the girls are too lazy and careless to put away their own clothes. They can't make a dress or cook a meal; they are of no use in the world. The boys are as bad or even worse. Get one of them to do a job of work, and the chances are unless you stand over him with a wet elm club and not only show him what you want him to do but how to do it, he will slight the job. The country is full of boys, but right energetic and reliable boys are scarce. In the language of the stock exchange, the demand is brisk and steady. That kind of boys are hard to pick up, and when one is found he need never worry about having a job.

REGARDING THE FAILURE OF JAMES E. SHERWOOD.

To the Editor of THE HUB:

Sir—In the matter of James E. Sherwood, bankrupt, the referee in bankruptcy, to whom this matter was referred about eighteen months ago, has just made an order directing the bankrupt to pay over to his trustee the sum of \$25,000, which the referee finds that the bankrupt has withheld, concealed or entirely failed to account for to his creditors, although an examination of the said bankrupt covering over 500 pages would apparently afford an honest man every facility to explain what he had done with at least a part of so large a sum.

The referee has fixed the sum to be paid over by the bankrupt after giving him the benefit of every disbursement made by him that could possibly be found in or inferred from his testimony or the exhibits, and a very generous allowance beside to cover any possible payment that he might, could, would or should have made.

The above order was made on the petition of Mr. J. Brownson Ker, the attorney for a few of the creditors who were willing to contribute a small percentage on their claims to thoroughly investigate a matter that on its face looked to have as many earmarks of fraud as the Krauss Bros. or Clark deals of a few years ago.

The indications, from the facts disclosed, are that this matter is only the outer edge of a more systematic and far reaching scheme than either of the above transactions, and that the leads now being followed will bring others within reach of the law before the efforts of the manufacturers are relaxed. The securing of this order has been the result of many months' untiring perseverance, as every obstacle known and unknown to legal practice has been interposed to tire out and discourage the interested creditors, even to the securing of the good offices of a gentleman connected with one of the alleged creditors, who sent out a letter to the other creditors, full of misstatements of fact, in which he urged them to send a power of attorney authorizing a certain lawyer, to whom he referred as "his attorney," and whose services he tendered to the creditors gratuitously, to act for them in securing a discontinuance of proceedings against this bankrupt and to consent to his discharge. It was, perhaps, only one of those strange coincidences that the attorney whose services were so tendered to the creditors in this matter was acting as the attorney in bankruptcy for one of the largest debtors of the Sherwood estate.

The facts as developed by the investigation of this bankruptcy matter would indicate that there is a wide variation in the standards by which an honest failure is judged. A certain manufacturer, having stated in substance at the first meeting of the creditors of this bankrupt that he had carefully examined the circumstances connected with this failure and assured himself that it was a thoroughly honest one, the question naturally arises as to what standard he compared it with to reach this conclusion.

It would seem as though what had been accomplished in this bankruptcy matter would show honest carriage manufacturers the advantage of pooling their interests in proceedings in bankruptcy, to the end that honest bankrupts might be relieved of their liabilities with as little delay as possible, that dishonest ones might be made to disgorge or be punished for their fraud, and that honest carriage dealers might be relieved from a competition that must eventually drive them into fraud or failure.

Very respectfully,

INVESTIGATOR.

Morris and Wright, two lawyers shrewd,
Though they themselves may like the sport.
Talking of fellows and of tires,
Tire all the fellows in the court.

TARIFF ALTERATIONS IN NEW ZEALAND.

CONSUL DILLINGHAM writes from Auckland, August 23 and September 2, 1900:

The treasurer for this colony recently "brought down" his annual budget and announced to his confrères in the House of Representatives that, because of a series of prosperous years in the colony, he was enabled to announce that there was at the present time a surplus of about \$2,945,000 in New Zealand's exchequer, and that he thought it an opportune time to suggest certain alterations in the colony's tariff.

The House of Representatives has agreed to the following schedules of duties, which are now in force:

Tea, 2d. (4 cents) the pound.

Currants and raisins, 1d. (2 cents) the pound.

Candles, 1d. (2 cents) the pound.

Cocoa, 3d. (6 cents) the pound.

Coffee, roasted, 3d. (6 cents) the pound.

Stearin, for match making, 0¾d. (1½ cents) the pound.

Paraffin wax, 1d. (2 cents) the pound.

Matches, wax, "Plaid Vestas," in cardboard boxes containing under 100 matches, 1s. (24 cents) the gross of boxes.

Wax, "Pocket Vestas," in tin or other boxes containing under 100 matches, 1s. 4d. (32 cents) the gross of boxes.

Wax, "Sportsman," "Ovals," and "No. 4 tin Vestas," in boxes containing not more than 200 matches, 4s. 6d. (\$1.09) the gross of boxes.

Wax matches, other kinds, for every 100 matches or fraction thereof contained in one box, 2s. 3d. (54 cents) the gross of boxes.

Patent medicines, 15 per cent.

Proprietary medicines and medicaments: (1) Bearing the name of the proprietor on label or package; (2) bearing a prefixed name in the possessive case; (3) not otherwise enumerated, prepared by any occult secret or art, 15 per cent.

Sarsaparilla, 15 per cent.

Drugs and druggists' sundries and apothecaries' wares, not otherwise enumerated, 15 per cent.

Chemicals not otherwise enumerated, including photographic chemicals and glacial acetic acid (B. P. standard) 15 per cent.

Tinctures and medical spirits of any recognized pharmacopœia, containing 50 per cent. proof spirit or less, 15 per cent.

Steam engines and parts thereof, including the boiler, or boilers therefor, imported specially for mining or gold-saving purposes and processes, or for dairying purposes, 5 per cent.

It was resolved that on and after the 29th instant, the duties of customs now charged on the under-mentioned goods, wares, and merchandise shall cease (for the purposes of this schedule the expression "machinery" shall be deemed not to include steam engines, or parts of steam engines, or steam boilers, land or marine); Kerosene, rice (dressed or undressed), rice (manufactured into starch in bond), salt, coffee (raw), all machinery for agricultural purposes, including chaff cutters, corn crushers, corn shellers, also articles used in manufacturing the same, *viz.*, chaff-cutter knives, tilt rakes, fittings for threshing mills, forgings for plows, machinery for dairying purposes, machinery of every description for mining purposes, including machinery for dredging: portable engines on four or any greater number of wheels, with boiler of locomotive type, also traction engines, liquid chlorine, cyanide of sodium, engine governors, all bolts and nuts, black or screw nuts, black or finished nuts, blowers (welded and flanged), boiler furnaces, plain or corrugated, chain pulleys, blocks of all descriptions and chains for same, engineers', boilermakers', brass finishers', smiths', and all metal and wood workers' machine and hand tools, steel rams (black or finished), for hydraulic cranes or jiggers.

WEDDING BELLS RING.

ON February 27, Mr. C. C. Castle, of the Hildreth Varnish Co., who is well known to the carriage fraternity, was married to Miss Bonnie, one of Louisville, Ky.'s, most popular young ladies. The wedding was a very brilliant affair, many out-of-town friends attended, and the gifts to the bride were most magnificent. After a wedding tour of several weeks, visiting the principal cities, the happy couple will make their home at East Orange, N. J. THE HUB wishes to extend congratulations.

Automobile Department.

AUTOMOBILE TEST ON LONG ISLAND.

CONDITIONS for the endurance test of the Long Island Automobile Club have been finally decided upon by the Technical Committee of the club. The distance of the test will be 100 miles, the location will be the best turnpike of Long Island, and the date will probably be April 15, though this has not been definitely decided upon.

Competing vehicles will be divided into three classes, according to motive power. There will be a maximum speed limit of fifteen miles an hour, and a time limit for the full course of twelve and a half hours. Speed through villages must comply with legal requirements. Carriages may be operated by either amateur or professional drivers, but no change of operators will be allowed after the start.

The course to be selected will comprise, as far as possible, all conditions of surface and grades. Contestants will be judged solely on the duration of the stops, regardless of cause. Timekeepers will be assigned to each vehicle, and these will keep a record of all stops and the exact time of each. Five hundred minutes will be adopted as a basis for computation and total stopping time will be deduced from that unit. The only stops that will not count against competitors will be such as are made in compliance with public safety.

Entries will be confined to vehicles carrying at least two persons, seated side by side, and they must carry their full complement of passengers. Contestants must provide their own fuel, water and battery relays and must be at a standstill when taking on supplies. Vehicles completing the test and complying with all the conditions will be awarded certificates showing their exact standing in the competition.

On the same day there will also be a hill-climbing contest, for which a cup will be awarded the winner in each class.

THE AUTO IN CHICAGO.

THESE are some of the things the Chicago Automobile Transportation Co. promises to do:

Transfer passengers from 'busses running north from Fifty-first street, south from Lincoln Park and east from Garfield Park, so that they may ride for a nickel from any of these starting points to any other one.

Establish a cab service in the loop district with a 25-cent fare and transfer from such cabs and any 'bus line.

Run 'busses for twenty-four passengers, with seats on top for smokers in summer, every four minutes in day time, two minutes during the rush hours and twenty minutes at night.

Admit no more passengers to the 'busses than seats are provided for.

Place twelve 'busses in commission between the depots.

Charter 'busses to theater parties for 10 cents the passenger and maintain a specially elegant line of 'busses for that purpose.

Maintain a cab service within the depot district and as far south as Twenty-second street for 25-cent fare, and outside of that district for 25 cents a mile.

Have the service in partial operation within six months and add thereto as rapidly as vehicles can be built.

Spend \$3,500,000 cash for equipage.

Run the 'busses and cabs as fast as the ordinances will allow, making the return trip to Lincoln Park in fifty-four minutes.

CAN ISSUE CERTIFICATES.

JUDGE JOSEPH BUFFINGTON in the United States District Court has handed down an order in the bankruptcy case of the Baldwin Automobile Manufacturing Co., of Connellsville, directing the receivers to issue certificates to the amount of \$12,500. They are to be issued in the denomination of \$500 each, and are to be used in operating the plant. These certificates are to be first liens against the property, with the exception of a mortgage held by the South Connellsville Building and Loan Association, all wages due workmen prior to the commencement of the bankruptcy proceedings, and all necessary reasonable expenses.

THE "AUTOMOBILE" CAN.

USERS of automobiles understand the importance of extra supplies when on the road, and appreciate every effort made to furnish them. To meet one of the acknowledged wants, the Wilmot & Hobbs Manufacturing Co., of Bridgeport, Conn., have provided a can that will hold a gallon. This can has a spout that can be reversed. This spout, when ready for use, is like that of any ordinary can; it, however, has a thread cut so that the spout can be reversed and screwed firmly into the can, leaving one screw end outside, on to which a cap nut can be screwed, thus making the can, with the spout inside perfectly tight, and preventing the slightest escape of the volatile matter, and reducing the space required for storage, besides overcoming the liability of the spout being bent or broken. Write the firm for further particulars.

ILLINOIS ELECTRIC VEHICLE TRANSPORTATION CO.

THE management of the Illinois Electric Vehicle Transportation Co. has issued a circular announcing that it has been decided to liquidate the company. The assets will be disposed of and the proceeds distributed among the stockholders. Of the capital stock of the company, there has been actually issued 158,620 shares, the amount received on subscriptions being \$793,700. There has been paid out on account of real estate \$50,000, and \$31,760 has been invested in improvement of the same. The expenditures on various other accounts up to February 1 aggregated \$642,588. The gross income to February 1 was \$137,106 and total operating expenses \$265,885, showing a loss of \$128,778, with additional loss in depreciating of vehicles and station equipments. The company on the date mentioned had \$205,458 in cash on hand or in bank, and now owns 109 vehicles. The consent of the Electric Vehicle Co. has been obtained to a cancellation of the contract between the two companies and a settlement of all existing claims and an exchange of mutual releases. A meeting of the stockholders of the Illinois Electric Vehicle Transportation Co. has been called for April 4 to ratify such cancellation of contracts.

AUTOMOBILE CORPORATIONS.

H. H. RIGGLEMAN, of New York City, recently incorporated the Columbus, O., Auto-Cab & Parcel Delivery Co., to introduce automobile delivery and electric cab service in that city.

THE Geneva Automobile & Manufacturing Co., of Geneva, O., was recently incorporated with a capital stock of \$100,000, being financed by Mr. J. A. Carter and others.

The William J. Smith Co., of New Haven, has been incorporated at Dover, Del., under the laws of that State, with a capital stock of \$100,000, of which \$30,000 has been paid in. The concern will commence operations in this city, in a few days, and will employ about a dozen skilled workmen in turning out a new engine for automobiles.

Dover, Del., February 19.—The Gilding Motor Vehicle Co., Philadelphia, to transport freight, passengers, etc.; capital stock, \$125,000.

Champaign, Ill.—The Illinois Motor Transit Co. with a capital of \$50,000 has been formed to operate automobiles. John Armstrong, John T. Ainsworth and S. D. Enochs are back of the enterprise.

New Haven, Conn.—Senator Kennedy has introduced a bill incorporating the Truck Automobile Co., of New Haven, with a capital stock of \$1,000,000 for the purpose of carrying on a general trucking business by automobiles.

One of the most recent incorporations in automobile circles is that of the Electric Cab Co., of Toronto, Canada, which has been chartered with a capital stock of \$50,000 to establish electric cab service in that city.

THE FIRST AUTOMOBILE.

Our French contemporary, *La Locomotion Automobile*, says: "A learned person has discovered, while delving in the files of the city of Antwerp, that, in 1479, the communal treasurer was authorized by the magistrates of the town to pay a bonus of 24 livres d'Artois to a man named Gilles de Dom as an appreciation of his gift to the city of a 'carriage set in motion by mechanical means only.'"

GROUT BROS. STEAM AUTOMOBILE.

(See "Latest Styles.")

GROUT BROS., Orange, Mass., are manufacturers of steam propelled motor vehicles of a high type, the essential features of which are the heavy wheels used, the finely constructed frame, made of heavy tubing and braced as it should be, the center steerer without one particle of vibration, the cross-spring hang up which takes up all vibration of the body. The engine is a very heavily constructed machine, double cylinder, reversible link, double slide cross-head, tubular boiler, 300 tubes and cannot explode. The burner has their own patent torch, which is one they claim to be one of the neatest and most convenient attachments now used in connection with steam wagons. They light the fire with this arrangement, simply applying a match. It keeps the vaporizer hot at all times, keeps up steam in boiler when standing with main fire out, relights the fire and prevents the fire blowing out. The main supply of gasoline is controlled from the seat, no other valves to touch after first starting. It saves fuel while standing, as the main fire is out, also when going down hill, and can relight from seat at once and the vaporizer will keep hot for hours ready to start at a moment's notice. They claim that the vehicle can climb any hill, and go as fast, and as far as any steam vehicle ever constructed for road use. It has a wide seat and its suspension insures easy riding. In style it is a fine looking vehicle in every respect. The company invites personal inspection, as they feel assured that they can demonstrate these facts to the satisfaction of all. They have just completed a special wagon for the fire department of Springfield, Mass., which is a very handsome vehicle.

LOOMIS LIGHT DELIVERY WAGON.

(See "Latest Styles.")

THE light motor delivery shown in our "Latest Styles" department is specially constructed for light work, such as dry goods, clothing, etc. This is the company's model 3, but they are prepared to furnish wagons of any dimensions or purpose. The running gear is constructed of steel tubing, and the axles are large and strong, to insure strength. The wheels run on ball bearings and the track is made to suit the city surface car tracks, and is not liable, therefore, to strain when running on them, as is sometimes necessary. The motor is an extra powerful double cylinder and is equipped to run 200 miles without refilling. The price of this style is \$1,200.

ST. LOUIS MOTOR CARRIAGE COMPANY.

(See "Latest Styles.")

THE illustration of the business wagon built by the St. Louis Motor Carriage Co., of St. Louis, Mo., illustrates a roomy, substantial and convenient business wagon. The gearing is enclosed and made a part of the engine base, thus preventing it getting out of line and enabling it to be run in oil. It is fitted with a double cylinder eight horse power engine and can be speeded from a stand up to fifteen miles per hour. It will carry 1,500 pounds in addition to the driver.

CONRAD CO'S STEAM DELIVERY WAGON.

(See "Latest Styles.")

THE Conrad Motor Carriage Co., of Buffalo, N. Y., are builders of motor vehicles for business and pleasure. The one illustrated this month shows a vehicle for business purposes, of pleasing form and ample proportions. The gear is of special construction and commends itself for its simplicity and strength. The company make a feature of their business of supplying gears for carriage and wagon, with full instructions for applying and fitting up, thus enabling carriage and wagon manufacturers to build automobiles in their own plants.

CENTURY STEAM CARRIAGE.

(See "Latest Styles.")

THE Century Motor Vehicle Co., of Syracuse, N. Y., are manufacturers of steam, electric and gasoline motor vehicles. All the vehicles are propelled by a pair of bevel gears on the rear axle, and the motor is suspended from the body toward the front end. The frames are constructed of seamless steel tubing and forgings, ball bearings being used throughout. They are flexible, to allow for inequalities in the road. The entire driving mechanism or power transmission is enclosed and is dust proof. The steam motor is a two-cylinder, double acting reversible engine, suspended from the body on pivotal bearings, and the engine shaft is coupled direct to the gear shaft which drives the rear axle. The driving mechanism and engine are entirely enclosed, so as to be dust proof. The vehicle is steered and the speed controlled by means of one steering lever. The brake is a band brake operated by foot lever. The vehicle is fitted with wire wheels and pneumatic tires, although in special cases delivery wagons will be fitted with wooden wheels and solid rubber tires. Their illustrated catalogue shows nine styles of their vehicles.

THORNEYCROFT STEAM TRUCK.

(See "Latest Styles.")

THIS truck is one of the largest and most powerful in use. It is after an English model, and is built by the Cook Locomotive & Machine Co., of Paterson, N. J. The Thorneycroft models have been well tested in England at the different competitions for heavy traffic motors, where they have been winners in their class. Their manufacture by an American company of high reputation places them in our market in the most satisfactory manner and bespeaks for them a successful future.

FIRST CLUB OUTING FOR THIS SEASON.

TWENTY-TWO motor vehicles formed in line for the first club run of the season of the Automobile Club of America, on March 16, to Borough Park, Brooklyn. The start was made from the club quarters, at Fifth avenue and Fifty-eighth street, Manhattan, at ten minutes past eleven o'clock in the forenoon, and the destination, Thirty-seventh street and Church Lane, Brooklyn, was reached at twenty-five minutes past twelve o'clock. Mr. Albert C. Bostwick, first vice-president of the club, in an electric automobile, led the procession down Fifth avenue and across to the Twenty-third street ferry, the route then being by way of Broadway in Brooklyn, Bedford avenue, Eastern Parkway and the Ocean Parkway. The distance traversed was about twelve miles. At Borough Park the chafeurs and their guests were entertained at luncheon by Mr. Cornelius J. Field, a member of the club. At three o'clock the return journey was begun, Mr. Bostwick again setting the pace for those who came back to the club rooms. Of the automobiles in line thirteen have gasoline as their motive power, four were electric, three steam, while a gasoline tricycle and a gasoline quadricycle completed the list. Several of the gasoline automobiles were furnished by Mr. Field for the use of such club members as were without vehicles themselves.

Those who drove automobiles of their own, besides Mr. Bostwick and Mr. Field, were Mr. A. Ward Chamberlin, Mr. E. T. Kimball, Mr. Percy Owen and Mr. George B. Goldsmidt, in gasoline road wagons; Mr. R. R. Robinson, in an electric stanhope; Mr. Jefferson Seligman and Mr. A. L. Riker, in electric carriages; Mr. Frank Eveland, Dr. Barrick and Mr. David, in steam runabouts, and Mr. Barry in a gasoline quadricycle. The weather was favorable, there were no mishaps en route, and the outing was thoroughly enjoyed by those who took part in it. Other runs to nearby points are under consideration by the Runs and Tours Committee of the club.

GASOLINE MOTORS STILL BARRED BY THE FERRY COMPANIES.

NOTWITHSTANDING that President McKinley has signed the amendment to the United States statutes introduced by Senator T. C. Platt, opening the way for ferries to carry motor machines propelled by gasoline, the ferry companies have not yet rescinded their rule in

the matter. This was discovered by Emil Hafelfinger, of Weehawken, a member of the Hudson County Wheelmen, when he attempted to cross the river to New York with his motor bicycle. Thus far no other kind of motor for a bicycle than one run by gasoline has been devised, so it was a certainty that he had a store of the proscribed fluid. He had to empty his tank before boarding the boat the same as of old. The only explanation he could get was one of red tape. According to the men at the ferry gate, the company had decided to wait until it received an official notice of the passage of the amendment to the law, and obtained a certified copy of the law before rescinding the order to their employees.

AUTOMOBILES ON PUBLIC HIGHWAYS.

INASMUCH as a judge in this State has ruled that a steam carriage or automobile is virtually a steam engine within the meaning of the law, and a verdict has lately been rendered against the owner of a steam vehicle who failed to comply with the statute regulating the movement of steam engines on highways, it is clear that, in fairness to the automobile, some change in the existing law is desirable. The measure which, it has been held, governs steam automobiles is Section 155 of Chapter 568 of the Laws of 1890, entitled "An act in relation to highways constituting Chapter 19 of the general laws," and reads as follows:

"The owner of a carriage, vehicle or engine propelled by steam, his servant or agent, shall not allow, permit or use the same to pass over, through or upon any public highway or street except upon railroad tracks unless such owners or their agents or servants shall send before the same a person of mature age at least one-eighth of a mile in advance who shall notify and warn persons traveling or using such highway or street with horses or other domestic animals of the approach of such carriage, vehicle or engine, and at night such persons shall carry a red light except in incorporated villages and cities."

Of course, when this law was passed no one knew that in the near future steam would be employed to propel light pleasure carriages on the highways; consequently the law was not meant to provide for the operation of such vehicles. In order to meet the march of invention and to remove the present hardship upon automobilists an amendment to it has recently been proposed in the New York State Assembly by Assemblyman Mansfield. It is as follows:

"This section shall not apply to any carriage or motor vehicle propelled by steam developing less than twenty-five horse power."

The amendment is a proper one, and the Legislature will do well and fairly to adopt it.—*New York Sun*.

AUTOMOBILE CUP RACE.

THE automobile race this year—from Paris to Bordeaux—for the International Cup promises to be a hotly contested one, and the results will be watched for with keen interest by every one who has a fondness for this up-to-date sport.

From what our special cable from Paris says of preparations in England, Germany and France, not only will the competitors be numerous, but their machines thoroughly representative of the great improvements that have been made in the last year, and the contest a most useful test of the relative value of automobile inventions in various countries.—*New York Herald*.

AUTOMOBILE LICENSES.

THE Chicago authorities have issued 378 automobile licenses up to date, for which 226 are for electric machines, sixty for gasoline, and the balance for steam vehicles. Although there have been a number of runaways and accidents since the automobile appeared on the street, not a single death has resulted from any of them, and only twelve have occurred in which any one was actually injured. Everyone that has taken a license will make a detailed report to the city electrician of accidents, in order that that official may keep a record of such matters.

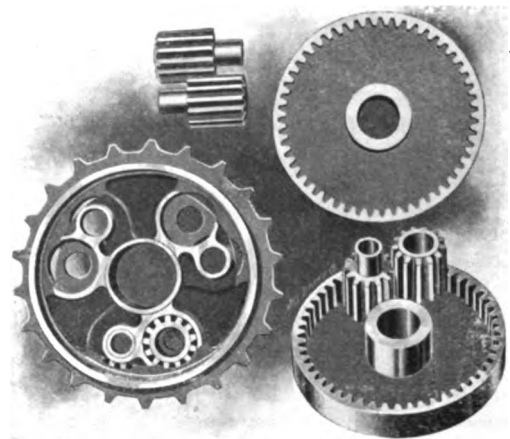
OLDS MOTOR WORKS.

It is less than a month ago that news of the burning of the Detroit plant of the Olds Motor Works was being sent over the country, but we are pleased to announce that they started up in their new temporary quarters on the 20th of March with a full line of new machinery belted ready for business. All of their automobile patterns and drawings were saved, as well as large quantities of material in the ware-

houses (not burned). This remains intact for the manufacture of "Oldsmobiles," so that it will only delay their automobile orders about thirty days. The company are more determined than ever to make 1,000 "Oldsmobile" gasoline runabouts before the snow flies again. By the last of April they will have reached a capacity of ten completed vehicles daily. Their Lansing plant will take care of the gasoline engine business by running day and night, consequently all orders will be filled with the usual promptness. Some of the papers state that the fire was caused by gasoline; this is not true, as there was no gasoline stored in the buildings. The explosions heard during the fire were carbonic acid gas tanks used to inflate tires. The fire was caused by a leakage of natural gas, which opened a 3-in. main into the center of the buildings; this will explain the rapidity of the flames. At this time they have orders for 334 "Oldsmobile" gasoline runabouts upon their books; these will be taken care of within the next two months, so that they are now prepared to take orders for May delivery.

EQUALIZING GEARS.

THE Brown-Lip Gear Co., of Syracuse, N. Y., are manufacturers of spur equalizing gears for automobiles, tricycles and wagons—light or heavy. Their model 3 is for automobiles of less than 2,500 pounds weight; their model 5 is for lighter motor tricycles of three horse power or less. Driving gear 100 spur teeth, ten pitch, $\frac{3}{4}$ in. face. Sprocket wheel can be used for chain if desired. Width 15-16



EQUALIZING GEAR, MODEL 3.

in.; hubs for axle project $\frac{1}{2}$ in. on each side. Hubs bored to receive axles from $\frac{5}{8}$ to $\frac{7}{8}$ in. diameter. Medium gears forty-two teeth, ten pitch, 5-16 in. face; pinions thirteen teeth, ten pitch. This equalizing gear is designed to be built into a case forming part of the frame construction. The foregoing specifications of stock size are subject to modification. The weight complete with driving gear is $6\frac{1}{2}$ pounds, and of its capacity it is the most compact, efficient compensating gear possible.

1901 TRIALS.

SECRETARY E. SHRAPNALL-SMITH, of the Liverpool Self-Propelled Traffic Association of Liverpool, England, informs us that the entry forms for competition are now ready for issue to intending competitors.

WILL HAVE THIRTY-TWO HORSE POWER.

DESPITE all the efforts to keep the matter secret, some facts concerning the automobile being constructed for Clarence H. Mackay by the firm of Charron, Girardot & Voight have leaked out. It is said that the new vehicle will be something unique even for an automobile. Its horse-power will be thirty-two, according to rumor, and it will be the fastest machine of its kind yet constructed. Eighteen thousand dollars is said to be the price Mr. Mackay will pay for his new toy. The firm building the automobile is reticent on the subject. It is admitted, however, that they have a big surprise in store for the public when the details of the new automobile are published. At present no one excepting the workmen are allowed to see the machine.

HEAVY MOTOR TRAFFIC IN FRANCE.

(Continued from page 522, February, 1901.)

An increase of power follows, and, unfortunately, this greatly increases the weight of the vehicle. For example, the omnibus of De Dion & Bouton at the 1897 trials weighed five tons empty, and 6.7 tons when fully loaded. Its commercial speed was 8.6 miles per hour.

That at the 1900 trials weighed 6.6 tons empty, and 8.6 tons when fully loaded. Its commercial speed was 11.2 miles per hour.

The estimated cost per traveler per mile with luggage, ten persons being reckoned to the ton, has fallen as follows:

In 1897.....	0.48d.
" 1898.....	0.24d.
" 1899.....	0.23d.

But in these calculations no allowance has been made for damage done to the roads, for in France, at least on public roads, no tolls are levied upon the transport companies for damage. If this side of the question were taken into account the expenses would probably be much increased, and the constructors would doubtless be obliged to study the reduction of the total weight of their high-speed public service vehicles to that of the former diligence, *viz.*, to about four tons when ready for the road. It is desirable, therefore, to inquire as to which part of the actual vehicles could be lessened in weight without damaging the efficiency of the whole.

Road traction presents the very great drawback of varying considerably, not only on the same surface through inclines, but also and especially by as much as 3 to 1, according to the season of the year. Hence the motor must be sufficiently powerful to overcome the resistance which the most hilly part of the road will present on the day when the road is in the worst state, unless on that particular day the useful load can be reduced without inconvenience. The steam engine, which enjoys the precious advantage of a variable cut-off and boiler pressure, seems to be the motor that is preferred for the "*Poids Lourds*" which have to convey passengers at relatively high speeds. When the dimensions are calculated for an average resistance, it is able to meet occasional increased demands, provided the boiler is in a state to furnish the extra steam. The weight of, and space occupied by, the motor and its boiler, as well as the evaporative power of the latter, are, then, the most important problems which constructors have to solve.

Regarding evaporative performance, the boilers which, in France, give the best results, are the "Field," which is employed on the Scotte vehicles; the De Dion & Bouton, which is employed on the vehicles of this firm; the "Niklaus," which is employed in the Le Blant tractor; the Turgan, which is employed in that vehicle; and the Serpollet, which is of the instantaneous generation type.

In addition to the water and fuel required for the actual journey, there must also be taken into account the weight of the quantities carried in order to avoid running short between points of supply. In a regular service to a suburb of an important center, an omnibus will generally have to carry out its usual functions of taking up and putting down passengers and goods at points close enough for the re-equipping to be done without loss of time. At the trials a little over nine miles was allowed, and this is obviously excessive.

The Serpollet boiler, which does not contain water, would seem at first sight to have a higher evaporative efficiency than is the case, but the reserve of heat provided in the mass of the heated tubes is, by reason of the low specific heat of iron, obtained only at a cost of greatly increased weight.

In order to reduce this weight, it is necessary to apply fuel producing the greatest number of units of heat per unit of weight. In practice the following evaporation per lb. of fuel are obtained:

Coal.....	7.0 lbs.
Coke	5.5 "
Petrol	6.5 "
Heavy oils	13.0 "

Hence it would seem that coal is superior to coke, but with this fuel the control of the firing is very delicate, especially if one wishes to avoid smoke, which should be strictly prohibited, if not in the country, at least in a populous district.

Heating by liquid fuel, which saves considerable weight and dispenses with the presence of a stoker, seems the ideal method of firing. Unhappily, in France the rights for petroleum and its derivatives constitute a monopoly which renders their employment too costly for industrial automobilism. Again, creosote oil is employed for pre-

serving railway sleepers, and its industrial worth for that purpose eclipses its calorific value.

For all these reasons, steam automobilism applied to the rapid conveyance of travelers and goods has not developed as rapidly as the first attempts promised.

Several vehicles of this type have been used by the *grands Magasins du Louvre*, but it has been clear for some time that it is an advantage to reduce the load to 12 cwts. The Bon Marché have some Kötter delivery vans which work with success under these conditions, but this being so they no longer come under the category of "*Poids Lourds*."

The problem of weight appears to have been solved at the 1900 trials, at Vincennes, by the Riker electric delivery van, of which the total weight was 2.82 tons, and the load 0.9 ton. The accumulators weighed 0.63 ton. It is true that it was only able to cover thirty-one miles of a hilly road, without re-charging its accumulators, by acting as an actual delivery van; that is to say, by depositing portions of its load of pig iron at different points of the route, and picking these up again in the evening before going back to be weighed. After a total course of 155 miles on very trying roads, this vehicle showed no signs of wear whatever.

Electrical energy can be so easily and economically produced in mountainous countries, which are frequented in summer by tourists, that several hotels have thought of making use of omnibuses with electrical motors, in order to take their passengers to and from the station. M. Jeantaud, at their request, has studied carriages of this type, but so far as I know he has not made use of any of them.

Another class of vehicle, which made an excellent performance on the roads of the Vincennes Annexe, is the electric motor omnibus with an automotor trolley, and this seems to provide the solution of the light automobile for the carriage of passengers and goods by road in hilly countries, for no motor excels the electric motor for variable powers. This omnibus, for twenty-four people, weighs 3.5 tons, empty, and, when fully laden, 5.2 tons.

The cinematograph will show you the facility with which this omnibus is manoeuvred, and how it runs in the midst of other carriages as if it were independent of its electric overhead wire. It owes this seeming independence to the fact that its trolley is self-propelled.

Briefly, this is the principle of its automotor trolley: The small, grooved, metallic rollers, which run on the two conducting wires, are driven by a three-phase motor, connected, through an induction coil, to an alternator driven by the motor of the vehicle. The trolley thus moves itself along, the connection between it and the vehicle being made by a flexible cable of two conducting wires—the first leading the current to the motor on the vehicle, and the second the alternating current from the vehicle to the two poles of the induction coil on the trolley.

The only difficulty is the meeting of two vehicles which, fed by the same wire, require to pass each other going in the same direction, or cross each other going in opposite directions. The very simple solution which has been adopted consists of exchanging the transmission cables of the two vehicles, which enables them to overtake or cross each other at any point on the line. The only weak point in this application of electrical energy to suburban traffic is the capital outlay on the overhead line. This solution at once strikes one as being specially applicable on long lengths of road, where overhead wires already exist for the transmission of electrical power for industrial purposes.

Of practical results we have not much to show. Many regular passenger services have been established, many more will soon follow, but none of them have lasted long enough to supply reliable particulars. We must not, however, conclude from the checks received that these services are not practical. The cause of the want of success appears to be the high price of the vehicles, which has forced the users to content themselves with inferior plant, which has not been properly repaired and maintained. Again, instead of establishing several services connecting an important center with a number of neighboring localities, which would allow of the establishment of one single repairing shop for all, and instead of commencing by conveying passengers without a fixed time table, which would have provided for the inevitable hitches at the beginning of a new industry, the contractors have commenced by guaranteeing services between a railway station and a locality which has made them hope for important traffic. The breaks down have discouraged the passengers, who have sometimes lost their trains, and the lack of a repairing shop, the establishment and maintenance of which would have made too big a hole in the general expenses of a single

line, has forced the vehicles to go on running until they could go no longer.

As horse haulage can take the goods from the sender to the consignee quite as well as automobile traction can in fine weather or on a paved road, it is not yet threatened by mechanical haulage for any traffic where a higher speed than 2.5 miles an hour is not required. In winter master carters can vary their teams according to the state of the roads, but in mechanical traction one can only reduce the load and speed. Accordingly, it is very desirable that our constructors should carefully study the conditions by which they can reduce their prices, still much too high in consequence of the unnecessary provision made for speed which is of no actual use to them commercially.

I shall close my address by giving a few details of the effect of quick-speed motor wagons with small wheels on road materials.

The mutual action of roads and motor vehicles ought to be studied for both paved and metaled roads, for it is not similar in the two cases. In pavements, each stone is of a shape individually to resist the weight of the wheels without any perceptible movement. This is owing to the mode of construction of the road and the depth of the sand foundation, by which the pressure is spread over a large enough surface of the subsoil to prevent any getting out of shape. However wet the weather may be, heavy motor traffic is unaffected on pavements. If, however, the pavement is badly kept up, so that its surface becomes irregular, while its paving stones become too rounded, in addition to the jolts and shocks which are so fatal to the preservation of the mechanism and of the vehicle, the surface then constitutes a serious obstacle to heavy motor traffic. This trouble has often arisen at our trials, and in the attempts made in the various departments.

When the tangent plane common to the surfaces of the road and of the tire makes with the horizontal an angle equal to that which corresponds with the co-efficient of friction, no matter what power is applied the wheels slip round without being able to move the vehicle forward, unless enough sand is thrown down to increase momentarily the co-efficient of friction. This unfortunate condition occurs all the more frequently as the diameter of the motor wheels is smaller, the pavement more badly kept up, and the gradient of the road more severe. I have also heard said by the engineer of the plant belonging to M. Say, the sugar refiner, that it has been necessary in a five-mile journey of his large electric lorry, of which we shall see a cinematograph view, to consume nearly 2 cwts. of sand.

The remedy for this unfortunate state of things depends on the public keeping up the roads and on the constructor of the vehicle. In the first place, the worst pieces of road must be relaid, or the holes filled up, especially on hills. In the second place, the constructor ought to try and increase the diameter of the wheels as far as their mode of construction and their mode of connection with the motor allows him to do without affecting the strength of the wheels, or the balance of the vehicle. At the present moment, a French engineer, who, two years ago, started a regular service of goods transport by automobile, at Bougie, in Algeria, on loose stone roads, is on the point of founding a new concern for conveyances of this kind in the Department du Nord, where the roads are paved. He has decided to try and increase the diameter of the driving wheels of his Scotte vehicles from 35 to 51 inches.

Contrary to what we have said of the individual resistance of the sets which constitute a paved road, metaled roads are composed of materials of small dimensions which are only able to resist the weight of heavy motor traffic by mutually helping one another. Again, the foundation and top layers together form a thickness or depth which is oftener than not insufficient to prevent the subsoil from having to bear so heavy a pressure that it gets out of shape. In normal weather, metaled roads are almost as firm as paved roads, and the resistance to rolling is about equal on the two. Unfortunately, when rain has fallen for several days, the binding material loses all cohesion and the road becomes a mass of movable stones, which slip about more and more easily under the pressure of heavily burdened wheels as the speed increases. At the same time, the depth of the road, already too small, and still further reduced by the displacement of some of the stones, transmits to the subsoil a pressure too great for its stability, and it gives way. When this is the case, the road continually presents an inclined plane in front of the driving wheels, and this largely increases the

rolling resistance, and, at the same time, adds considerable friction between the sides of the felloes and the depressions that are made. All engineers responsible for roads have agreed that during the rainy season the rolling resistance may be treble what it is during fine weather. This is one of the most unfavorable conditions for mechanical propulsion, for it necessitates the motors not only being capable of a single maximum effort, but of a continual one, which may be three times greater in wet weather than in fine, unless one is content to diminish the speed.

The remedy for this state of things depends, as we have seen in the case of paved roads, on proper maintenance, and on the motor vehicle builder. In the first place, the depth of the road should be increased; it should be kept clear of all excess of detritus which might increase the state of mobility of the material, and the subsoil should be drained in order to prevent its giving way under the load. In the second place, the weight supported by the motor wheels should be diminished, and the latter should be given a width of tire in harmony with the compressibility of the road. I am going to make use of the experience acquired in a regular transport service, for both passengers and goods, which has been established since April, 1899, in the Department de la Meuse, between Stenay and Montmédry, in order to arrive at the extra expenses which heavy motor traffic entails in the construction and maintenance of metaled roads.

This public service makes use of 11.2 miles of the National road (No. 47), where, before the establishment of the "*Poids Lourds*," the traffic consisted of ordinary vehicles. Up to that time the roads were kept in repair by adding new ballast, well screened, under the following conditions:

In order to maintain the 14-foot road in good order, it was necessary to repair 1.7 miles by laying 848 cubic yards of quartz from the Vosges, or of "trapp" from the Ardennes, both materials of excellent quality. This corresponds to 75 cubic yards per mile per annum, and to a wear of .33 inch per annum. The annual cost was £480.

Since the establishment of the "*Poids Lourds*" service, consisting of two De Dion & Bouton omnibuses for twenty-two people, and one five-ton lorry for goods, we have weights of at least eight tons, going at speeds of at least nine miles an hour. It was found that, for a distance of about three miles, where the ground was damp, ruts had been formed in the road, which it was impossible to get rid of. It was necessary to carry out the drainage of the subsoil, which cost £600. It was afterwards found to be necessary to increase the width of the road by two feet. This additional width was indispensable in order to obviate all the inconveniences which were produced when the wheels of the lorry, having a total weight of eleven tons, passed over soil at the sides, which was not metaled. Again, while waiting for the drainage work to be carried out, it was necessary to put down fresh stones, and this cost £2,160. Finally, from the estimates made up to the present, the engineers of the Department de la Meuse consider that the normal maintenance of the roads will now have to allow of the mending each year of 2.9 miles with 1,830 cubic yards of material. This corresponds to 163 cubic yards per year per mile, and to a wear of .60 inch per annum. The annual cost will be £1,040, which is an increase of £560 per annum for the whole road, or of £50 per mile.

A moment ago I spoke in passing of the width of tire that should be adopted if one wishes to diminish the destructive effects upon the roads. Although this very long address has already put your patience to a rude test, I think I ought to ask your attention for a minute longer, in order to treat briefly this question of the width of tire, as it is a most important one in heavy motor traffic. One certainly must not forget that at a competition at Versailles, one of the engineers on the jury said, with the consent of all: "Without excellent roads, heavy motor traffic is impossible."

The width of tires which, according to the load, was to be put on the wheels of various road vehicles, and the effect of this width on the life of the roads, occupied the minds of the greater number of French engineers during the whole of the first part of the nineteenth century. Up to 1851, the following regulations were in force:

Width of tire. Wagons (in winter). Public service vehicles.

3.1 inches.	1.8 tons.	2.6 tons.
4.3 "	3.2 "	3.5 "
5.5 "	4.7 "	4.5 "
6.7 "	6.3 "	..
9.8 "	9.6 "	..

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tire. 1
that wid
which me.
to-day in
inches wide,
front tires on.

Very wide tire proved in the c. these conditions ti. driving action and v. trary, if the soil is as weather, curves make no adhesion. For the motor is necessary then to have two tires for winter, during which the other with narrower tires for very coherent.

* * * * *

Driving on all four wheels has also been tried. The only advantage obtained is that the total moving weight is used for a. is very useful on hilly journeys, but one cannot lessen the on the driving wheels without giving the steering wheels the same diameter and dividing the load uniformly. One cannot, therefore, approve the arrangements for front driving, such as those of Doré or Gandon, which move around a central bolt, and which have the same drawback as the arrangement of the multiple driving wheels of Le Blant. If combined front and rear steering is adopted, it is possible to turn in so short a radius that the wheels need not be below the platform.

THE TRYST.

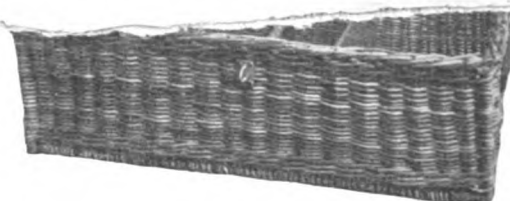
De night creep down erlong de lan',
De shadders rise an' shake,
De frog is sta'tin' up his ban',
De cricket is awake;
My wo'k is mos' nigh done, Celes',
To-night I won't be late,
I's hu'yin' throo my level bes',
Wait fu' me by de gate.

De mockin'-bird'll sen' his glee
A-thrillin' thoo an' thoo,
I know dat ol' magnolia tree
Is smellin' des fu' you;
De jessamine erside de road
Is bloomin' rich an' white,
My hea't's a-th'obbin' 'cause it knowed
You'd wait fu' me to-night.

Hit's lonesome, ain't it, stan'in' thaih
Wid no one nigh to talk?
But ain't dey whispers in de aih
Erlong de gyahden walk?
Don't somep'n kin' o' call my name,
An' say "he love you bes'?"
Hit's true, I wants to say de same,
So wait fu' me, Celes'.

Sing somep'n fu' to pass de time,
Outsing de mockin'-bird,
You got de music an' de rhyme,
You beat him wid de word.
I's comin' now, my wo'k is done,
De hour has come fu' res',
I wants to fly, but only run,—
Wait fu' me, dear Celes'.

—Paul Lawrence Dunbar, in the November "New Lippincott."



RATTAN TRUNK.

The rattan trunk is both light and strong. The one shown this month was manufactured by L. Goldsmith, Jr., Twenty-eighth street and Broadway, New York City. It has detachable partitions and is plentifully supplied with straps to render it possible to keep everything in place without the necessity of packing very closely. These trunks are built to order and can be made to fit behind the seat on top of the body, or braced out from the back of the body itself. All that is required is that you inform the manufacturers as to the peculiarities.

THE COMBINATION A GOOD ONE.

THE Crest Manufacturing Co., of Cambridgeport, Mass., have sent out with their motors a number of Loomis carburetters, made by the Loomis Automobile Co., of Westfield, Mass. The reports have been so excellent that they have given an order for 250 carburetters, which is shortly to be followed by another large order. By the way, it was the combination of the Crest motor with the Loomis carburetter, that did the extraordinary hill climbing at the cycle and automobile show at Madison Square Garden in January.

THE JINRICKSHA IN FLORIDA.

JINRICKSHAS have been introduced into America. They are now in common use in more than one of the winter resorts of Florida. At a fashionable wedding at Palm Beach recently several of the guests were driven to the ceremony in jinrickshas. These were pulled by negroes in white suits, wearing pith helmets and looking truly tropical.

The jinricksha, as everybody who has visited Japan can testify, is one of the most convenient of vehicles for getting about. It is an exceedingly light little two-wheeled wagon, with a hood, which may be raised to shield the rider from sun or rain.

A man can draw one of these vehicles over a smooth road with little effort and can make better time than a horse. Some of the shell roads of Florida are excellent for the purpose, and there seems to be no reason why the idle negro labor there should not be employed in drawing visitors from place to place in these handy little wagons.

i. e., to the rear of the seat. This is provided for the occupants of the rear seat without elongating the body.

CHARLES N. DENNETT, of Amesbury Mass., was granted a patent, dated March 31, 1896. No. 557,195. Illustrated by Nos. 231 and 232. The object of this invention is to provide a carriage that can be arranged for use with but one seat facing to the front, or with

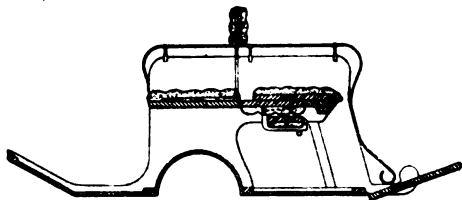


FIG. 231.

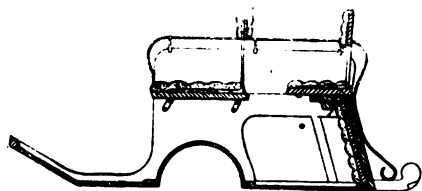


FIG. 232.

two seats, one facing to the front and one to the rear, or with two seats, both facing to the front, as may in any case be desired; and it consists in the peculiar construction, arrangement and combination of the several parts.

SETH H. GAGE, of Amesbury, Mass., was granted a patent for a carriage, dated May 26, 1896. No. 560,706. Illustrated by Figs. 233 and 234. This invention relates to a two-seated carriage, and it

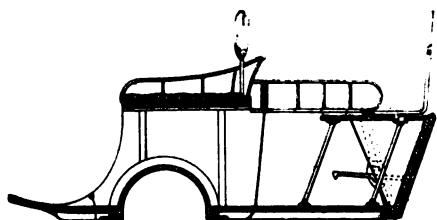


FIG. 233.

consists of the novel construction and arrangement of parts herein-after described, whereby the rear seat may be used as a forward-facing seat; or it may be used as a rearward-facing seat, in which

or a foot rest;
and tail gate fold-

anted a patent, dated
5. This invention re-
which the front seat is
aboard in order to allow
rear seat; and the invention
er described of the front seat
whereby said front seat, instead
and a fixed center and falling, when
board or the sills, swings or slides for-

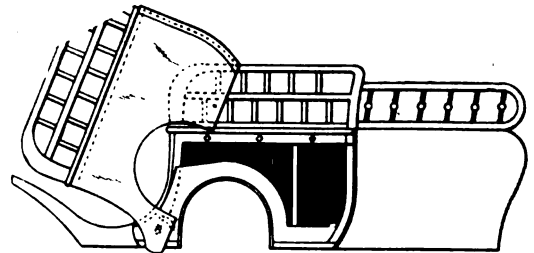


FIG. 235.

ward on a line produced by a combination of cam-grooves, and is supported in its extreme forward position without resting on the dashboard or sills, but in a position elevated from and out of contact with both.

JAMES A. McLEAN, of Amesbury, Mass., was granted a patent, dated September 1, 1896, No. 566,790, illustrated by Figs. 236 and 237. This invention relates to that class of carriages in which the

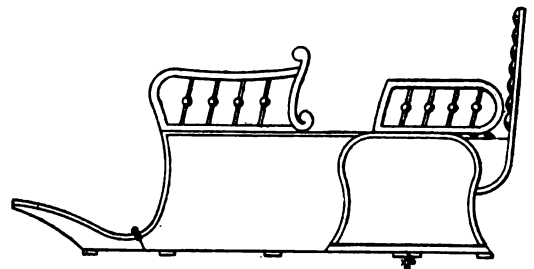


FIG. 236.

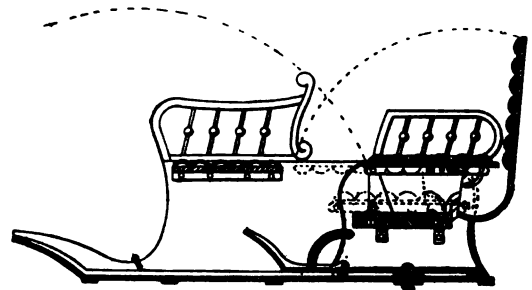


FIG. 237.

rear seat is reversible, that is to say, may be changed from a forward-facing position to a rearward-facing position, and *vice versa*. In this invention the rear seat rotates in a horizontal plane, while secured to it and rotating with it are portions of the sides of the body between which the seat is located and also the lazyback, which is adapted to swing down and serve as a deck when the rear seat is not in use.

Also one bearing the same date, No. 566,791, illustrated by Figs. 238 and 239. This invention relates to that class of carriages in which the rear seat and seat back are so constructed and arranged that said seat, when not in use, may be lowered into the carriage body by swinging the seat back or lazyback down from its normal vertical position into a horizontal position, in which position it serves as a deck or deck panel. The invention or improvement consists in the novel

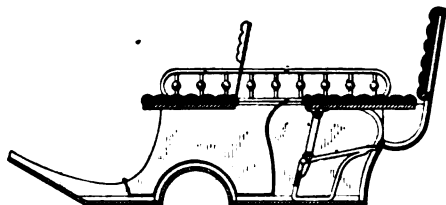


FIG. 238.

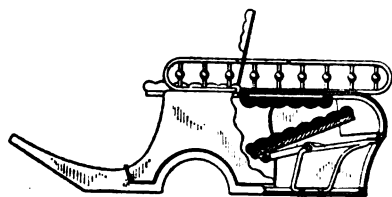


FIG. 239.

construction and arrangement of the irons or connections supporting the rear seat and connecting it and the lazyback with the carriage body in such a manner that said irons may be readily detached from the carriage body, and that when so detached the irons, rear seat and lazyback thereof may all be lifted bodily out of the wagon, as the only connection between the said parts and the carriage body is where the irons are detachably secured to the body, as above mentioned.

JACOB N. MILLER, of Bellefontaine, O., was granted a patent for a vehicle body, dated October 20, 1896, No. 569,794, illustrated by

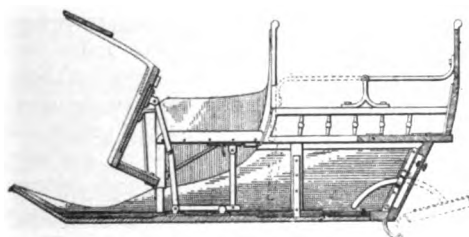


FIG. 240.

Fig. 240. This invention relates to certain improvements in interconvertible one and two-seated conveyances and especially in those of the surrey-trap order.

CHARLES A. HENNICKE, of Buffalo, N. Y., was granted a patent, dated November 24, 1896, No. 571,859, illustrated by Figs. 241 and

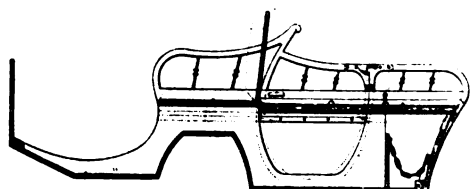


FIG. 241.

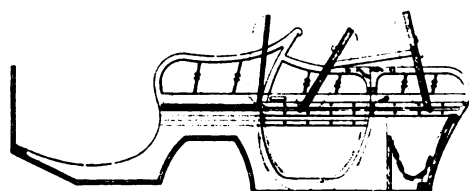


FIG. 242.

242. This invention relates to that class of shifting seat vehicles which may be converted into a single seat vehicle, an ordinary two seated carriage, or a dos-a-dos carriage. The invention has for its objects to produce a similar vehicle of this character in which the shifting seats are not liable to get out of order, to so construct the vehicle that the rear seat is accessible without disturbing the front seat or its occupants, and to prevent the vibration or rattling of the various parts by simple means.

JAMES A. EDWARDS, of Owosso, Mich., was granted a patent for a folding seat for vehicles, No. 574,310, illustrated by Figs. 243 and

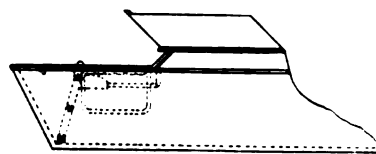


FIG. 243.

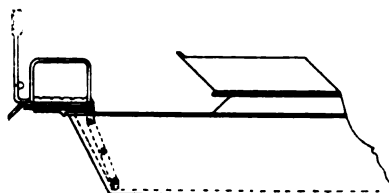


FIG. 244.

244. This invention relates to any class of vehicles which ordinarily have a boot and in which a folding seat is desirable in order to vary the passenger carrying capacity of the vehicle; and its object is to provide a seat which can be used to accommodate extra passengers, children, or others, and which, when not in use, can be folded down into the boot and leave the vehicle the same in external appearance as though it contained no extra seat, but was of the usual construction.

A. L. AND F. H. KNOBLAUGH, of Cincinnati, O., were granted a patent for a jump seat for vehicles, dated May 4, 1897, illustrated by

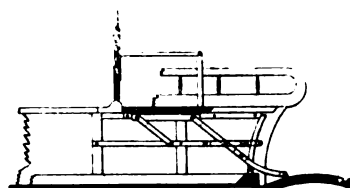


FIG. 245.

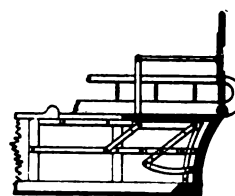


FIG. 246.

Figs. 245 and 246. The object of this invention is to provide a movable rear seat for four passenger vehicles which is easily operated by the tail gate to bring it near the front seat when the occupants desire to ride back to back, and to move it to the rear of the body when the tail gate is closed to form an ordinary four passenger vehicle.

JACKSON SLEIGH CO.

THE Jackson Sleigh Co., Jackson, Mich., in addition to the manufacture of a large line of sleighs, are also wholesale manufacturers of surreys, phaetons, buggies, bike and driving wagons. Their catalogue No. 11, for 1901, contains numerous illustrations of their latest styles. Send for a copy.

OTTAWA CAR COMPANY.

THE Ottawa (Ont.) Car Co., who are at the present time in receipt of numerous orders for the manufacturing of high-class broughams, landaus, rockaways, delivery wagons and other fine and high grade express work, and electric cars, and who have supplied some of the most artistic and durable electric cars from the Atlantic to the Pacific Coast, have secured the services of F. Gibbard as draftsman and foreman of the body department, who was formerly employed as draftsman and foreman of the Oneida Carriage Co., Oneida, N. Y.

A COLLEGE student in rendering to his father an account of his term expenses, inserted, "To charity, \$30." His sire wrote back, "I fear charity covers a multitude of sins."

Items of Interest.

CHARGES AGAINST A BANKRUPT.

JAMES E. SHERWOOD, a former wagon and carriage dealer, of Suffern, N. Y., filed a petition in bankruptcy in September, 1899, with liabilities placed at \$30,642, and nominal assets at \$21,470. The case was referred to Lawyer William T. B. Storms, of Nyack, referee in bankruptcy for Rockland County, and to-day Mr. Storms made his report, in which he says that Sherwood has concealed from his creditors more than \$28,000, almost enough to pay the creditors in full, and directs him to pay this money to his trustees. This is the result of a long and bitter contest between the bankrupt and his creditors. Mr. Sherwood is the superintendent of the poor of Rockland County, to which office he was chosen at the last county election, having been nominated on the Democratic ticket. Referee Storms' report to-day startled the friends of Mr. Sherwood in this county. The referee says that during the eight months preceding the filing of his petition the bankrupt purchased from about eighty different wagon companies goods amounting in the aggregate to \$28,689.74, and that the payment shown by him to have been made on account of such purchases, aggregates only \$282. After reviewing the testimony the referee says:

"Giving the bankrupt the benefit of every payment testified to by him, or what could be inferred from his examination, there is still the sum of \$28,128.14 totally unaccounted for. His bank books show a total amount to his credit from January 1, 1899, to September 1, 1899, of \$41,202.14. Allowing him to have paid out the following sums as testified by him for traveling expenses during that time, \$2,400; for procuring his nomination as superintendent of the poor, \$800; for his election to the same office, \$1,200; paid to the Cortland Wagon Co., \$2,000; paid out on private accounts, \$450; for house servant, \$80; groceries, \$144; butchers' bills, \$160; and care of horses, \$240, which in all amount to the sum of \$7,474—there is still the sum of \$33,728.14."

SOLID RUBBER TIRES.

THE Hartford Rubber Works Co., Hartford, Conn., claim to have, without any question, the very best process for applying rubber tires to vehicle wheels; their complete machines for doing the work are now ready for the market. By manufacturing Hartford solid carriage tires out of the highest grade of material, they are quite confident of establishing a standard of quality not heretofore attained in this line, and they believe that their machines for applying same will make the rubber tire part of the carriage business both profitable and pleasant. If you are interested in solid tires, the company will be pleased to have their representative call upon you or to give you such information as will enlighten you on the subject.

KEYSTONE BLACK FILLER.

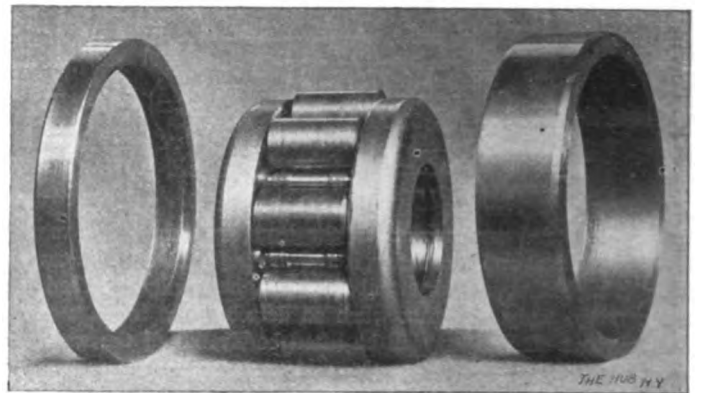
THE importance of a level and substantial foundation is so well understood by carriage painters that no argument is necessary, but how to obtain it is a question with many, and one that can lose nothing by discussion. The quality of the rough stuff plays an important part, and individual painters have their preferences. It follows, therefore, that in treating on this subject we confine ourselves to what is on the market, and has won a reputation by long continued use. In that connection we can call attention to the Keystone Black Filler, which can be purchased dry or mixed. This filler, when mixed with pure white lead, linseed oil and turpentine in proper quantities, can be relied upon to give the most satisfactory results. If not acquainted with this filler, we recommend communicating with the manufacturers and obtain from them a formula for mixing for different kinds of work. We do this because of our knowledge of the fact that with all kinds of painters' materials proper methods of mixing determine the results of the finished work. When properly mixed this filler works easy. It does not clog the pumice stone when rubbing and furnishes a substantial foundation for the paint that follows. It is furnished in two grades; one, a fine, for fine surfacing, and coarse, a grade for covering iron-work. Those painters who are not familiar with this filler, and are not obtaining good results from what they are using, should give the Keystone Black Filler a trial.

THE AMERICAN ROLLER BEARING COMPANY.

THE cut herewith shows a single bearing, with the outer barrel and bevel thrust ring removed. We have already described in these columns the construction and theory of this roller bearing, yet our readers may be interested to hear of the progress made by this company and the various fields into which the bearing has found its way.

The business of the company was so great at the start that the plant soon became inadequate to meet the demand. Within the last few months, however, the capacity has been greatly increased.

Originally the company devoted most of its energies to automobile bearings, but now it has entered various fields, especially heavy truck work. In the last few months they have taken orders for bearings for ore cars, gun carriages for the United States Ordnance Department, heavy trucks, furniture vans, electric, steam and gasoline de-



SINGLE BEARING WITH OUTER RACE AND BEVEL THRUST RING.

livery wagons, light motor carriages of all kinds, shafting, motor and engine bearings, electric car bearings, etc. It will be seen, therefore, that the field for a good roller bearing is an extensive one.

The bearing has proved equally efficient under heavy and light loads. The number of sizes manufactured has been greatly increased and the methods of manufacture much simplified, so that the company can now handle large or small orders with reasonable deliveries. For the convenience of automobile and carriage builders the company has undertaken to furnish wheels complete with their roller-bearing hubs, built to suit the purchaser. This includes driving wheels to be keyed to the axle, as well as roller-bearing wheels.

Recent speed tests, already described in these columns, showed some remarkable results. A speed of 30,000 revolutions per minute was maintained steadily without perceptible heating, this with a dry bearing. The speed was then increased gradually to 50,000 revolutions before the bearing stopped from overheating. This test shows how thoroughly the theory of a purely rolling motion is substantiated in practice. We are informed that the bearing has not had a single failure or breakdown since the beginning, and the company's guarantee should be an easy one to maintain when one considers that the bearing is made entirely of hardened steel parts and that the alignment of the rollers depends only on the tensile strength of the separators.

THE TIMKEN MONEY-SAVER.

TIMKEN ROLLER BEARING AXLE CO.,
29 Beverly street, Boston, Mass.

GENTLEMEN—We are greatly pleased with the running of the caravan which Abbott-Downing Co. equipped with a set of your roller bearing axles. We are hauling 100 cases of beer, weighing 65 pounds each, 6,500 pounds, and with the weight of the wagon 1,650 pounds, a total weight of 8,150 pounds, with one horse, and with apparent ease.

We intend to equip all of our wagons with your axle as fast as we can spare them, as we consider them a great saver of horse flesh, and we can haul at least 25 per cent. more of a load. How soon can you furnish 2½ inch axles, square? Very respectfully,

WALDBERG BREWING CO.,

Per M. H. Cobe, president.

Jamaica Plain, Mass., March 21, 1901.

SEASONING CARRIAGE TIMBER.

In these days time is of too much value to be wasted by years of waiting in seasoning timber, and scientific methods have been introduced by which the results are obtained by artificial methods without detriment to the fiber. Among the kilns which are guaranteed to perform the work are the Emerson. The purchasers of these take absolutely no risk, as a specific guarantee is given of performing a certain amount of work, and payments are contingent upon its fulfillment. They guarantee to dry lumber thoroughly, without destroying the elasticity and strength in a more perfect manner than any known at present, and in less time in proportion to the work performed.

One of the objective points in the development of this process was to produce a system of drying that would be the acme of simplicity, and this certainly has been obtained. It is entirely free from all complications and intricate parts, having neither fan nor engine, condensing apparatus to keep cool by dripping water or similar means, nor chimneys, stacks or ventilators to be constantly adjusted, nor complicated steam heating apparatus so constructed as to be affected by unequal expansion or freezing; the whole apparatus requiring no attention whatever after it is once started. The process of drying is continuous and automatic; its continuity can only be disturbed through neglect of the fireman to keep up steam in the boilers.

The walls of the building are completely surrounded with moisture being given off by the material being dried, the automatic principle of regulating same by gravitation insures a uniform dampness, and the heating agent being placed above the woodwork of the base of the kiln, and resting upon iron shoes, there is no danger of the kiln being destroyed by its own heat.

The fact that the heated air does not escape from the kiln after it has once passed through the material, as in other systems, but is retained, and by peculiar construction of kiln and process employed, cannot pass out until enough moisture has been evaporated from the material to so fully saturate the air that it falls by gravity, proves conclusively that the acme of economy and steam consumption has been attained.

COMMERCIAL TRAVELERS PREFERRED CREDITORS.

An important ruling by Judge A. T. Roraback, of the Superior Court of New Haven, is to the effect that commercial travelers are preferred claimants against an insolvent concern, just as are the laborers and mechanics. The point had never been passed on by a Connecticut court before. It came out in the case of three traveling salesmen who were employed by the Meriden, Connecticut, Bronze Co., now in a receiver's hands, and who had claims to be settled. They got their claims.

DASH RAILS, ETC.

THOUGH this is the first season the J. B. Timberlake Co., of Jackson, Mich., manufacturers of dash rails, etc., entered the carriage field, they are having very gratifying success. They employ the best workmen they can find, make high class work, and are producing all their factory will permit. The combination dash rail and reinholder invented by them is an easy seller everywhere.

"STANDARD" TOOLS.

THE Standard Tool Co., of Cleveland, O., have won honors at home and abroad for the high quality of their products. They make, among other twist drills, a line specially adapted to the carriage, smith and wood shops, and the experience of every carriage worker is that the twist drill is by far the best tool for the purpose. This company makes full lines for hand and machine work, reamers, chucks, etc., and the buyer who wants reliable tools never makes a mistake when he purchases of the Standard Tool Co.

HESS SPRING & AXLE CO.

It's a luxury to be a salesman for a firm like the Hess Spring & Axle Co., of Carthage, O. They never were quite as busy as now. They are running their plant twenty-two hours every day, except Sunday, working two crews of men eleven hours each. What more can they do to fill your orders promptly?

SPRINGS FOR THE PHILIPPINES.

THE Tuthill Spring Co. was a successful bidder for a lot of springs required by the United States Army for ambulances to be used in Manila, Philippine Islands. Of course, such goods were needed immediately, and the time required to deliver was taken into consideration as much as the price. The Tuthill Spring Co. agreed to get them out in ten days, and receiving the specifications the day after the bids were opened, they made delivery the seventh day thereafter.

NATIONAL VEHICLE BOARD OF TRADE.

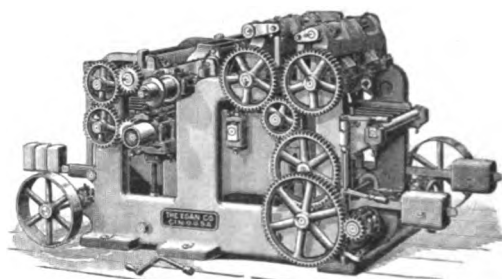
MANY of the wholesale carriage manufacturers met in Chicago on March 14 and organized an association, to be known as the National Vehicle Board of Trade. The object of the association is to promote the welfare of the wholesale and retail dealers in and manufacturers of vehicles. The meeting was largely attended, the manufacturers of at least 80 per cent. of the vehicles manufactured in the United States were represented.

HAND MADE LACES.

F. J. SCHMID, of New York City, is one of the few manufacturers who weave coach laces by hand. He has a well arranged plant, the building being three stories high and well lighted on all sides, and is fitted up with fourteen looms and the necessary winders, etc. Mr. Schmid has been in the business thirty-five years, thirteen years as a journeyman. He is a thorough master of the business and enjoys a most excellent reputation. He makes special laces for all the leading carriage builders, who have them made to their own patterns.

PATENT NEW DOUBLE CYLINDER SURFACER.

A GOOD planer for planing hardwood lumber is bound to be a great advantage for any first class factory. We present a cut of a newly designed and improved machine, patented December 19, 1899, that will plane both sides of hardwood lumber 30 inches wide and up to 12 inches thick. This machine has broken rolls, and each section is center-gear, and you can put two or more pieces of unequal thickness over it at the same time. The lower head comes almost directly under the top, and can be drawn clear out of the machine for sharpening and re-setting the knives. It also has an automatic device for raising and lowering the bed for different thickness of material, by means of four screws at each corner, and can be instantly



NEW DOUBLE CYLINDER SURFACER.

started or stopped by a lever convenient to the operator. It is one of the most powerful machines made, and will stand up to do very fine and accurate work, and can be recommended to first class woodworkers wanting a first class double cylinder planer for hardwood, and for this purpose the makers claim great advantages for it. The manufacturers of this improved planer, J. A. Fay & Egan Co., of 421 to 441 West Front street, Cincinnati, O., will be pleased to furnish any of our readers who may be interested full particulars and lowest prices on application, and will also forward their large new illustrated hanger free.

HAVE INCREASED THEIR FACILITIES.

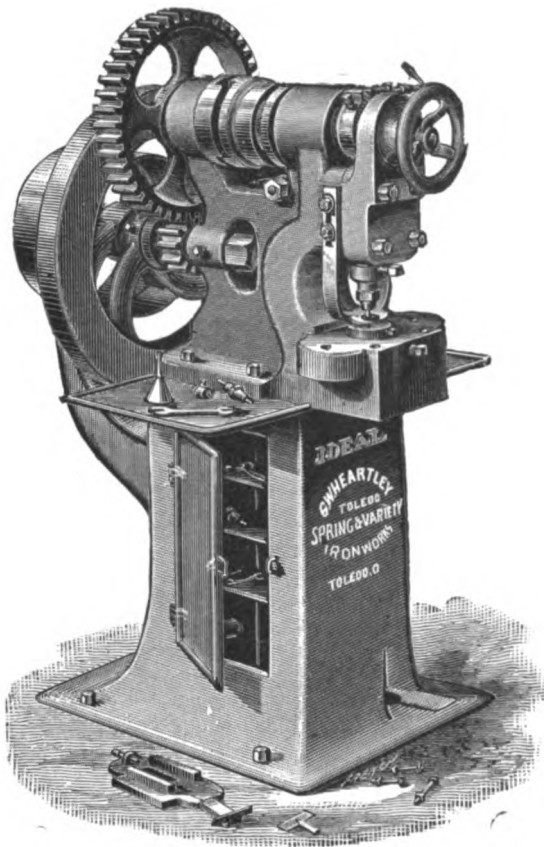
THE Jackson Cushion Spring Co., of Jackson, Mich., have moved into a larger building and increased their facilities by adding many new machines of their own invention. This firm have been deluged with orders in the past, but with the increased room and equipment hope to fill all future orders promptly.

THE ACME VEHICLE CO.

THE Acme Vehicle Co., of Pontiac, Mich., are successors to the Halfpenny-Giles Co., Martin Halfpenny retiring, and Mr. Giles continues as general manager of the new company. The members of the new company are D. S. Giles, R. J. Lounsbury, Sylvester Cole and Lee Dunlop. They will continue to manufacture the same high grade of solid and pneumatic tired bike wagons and other specialties as heretofore.

THE IDEAL POWER PUNCH AND SHEARS.

THE accompanying illustration represents one of the machines manufactured by the Heartley Variety & Tool Works, of Toledo.

**POWER PUNCH AND SHEARS.**

O. This machine is known as the "Ideal" power punch and shears, a combination machine that has been used to a good advantage in many shops. An examination of the illustration will give a good idea of the machine's construction and possibilities of its use. As this is but one of the many machines manufactured by the company, we recommend our readers to communicate with the company and obtain one of their illustrated price-lists.

PAPER COVERS.

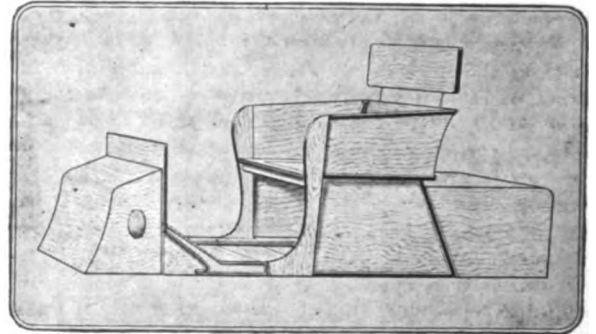
REAL improvements are always appreciated, is a statement fully proven by the manner the carriage manufacturers all over the country are adopting the patent paper vehicle and shaft covers, invented and manufactured by the Seinsheimer Paper Co., of Cincinnati, O. These covers are quickly put on, cost much less than the old method of covering and do not stick to or mar the varnish.

BRIDGEPORT LACE COMPANY.

THE new plant of the Bridgeport Lace Co., located in the outer part of the city, is a brick structure, well lighted and commodious. It is fitted up with the most modern power looms and other machines for lace making. The company enjoy a most excellent reputation for their laces.

A GROWING CONCERN.

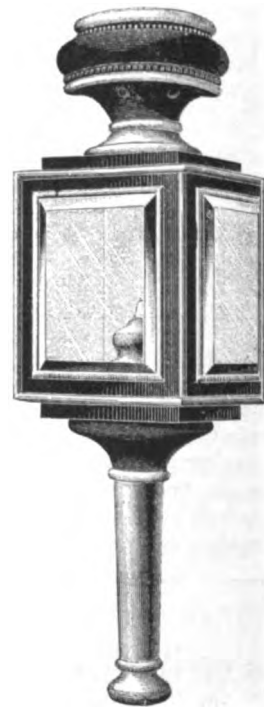
H. A. HORTON, of New Haven, Conn., manufacturers of bodies for carriages and automobiles, also high grade carriage woodwork, reports that business is very brisk, and that he finds that even his new plant is not large enough to enable him to meet the demands made upon him. He is working his large force of men night and

**AUTOMOBILE BODY.**

day to keep up with his orders, and then has great trouble in keeping up with them. His work is of the very latest design and best quality, and any one needing the line of work made by him will do well to write him before ordering elsewhere. He can build any kind of body to order. He also does drafting and designing.

THEY MANUFACTURE FINE CARRIAGE LAMPS.

THE Stevens & Sackett Co., of New Haven, Conn., succeeding the well known and long established firm of C. F. Thompson & Co., announce that with increased and improved facilities, they propose to maintain the high standard of hand made carriage and hearse lamps for high grade work, for which the house has long been

**SQUARE COACH LAMP.**

noted, and anyone in need of fine carriage lamps will do well to correspond with them and procure catalogue and prices.

HAVE CHANGED HANDS.

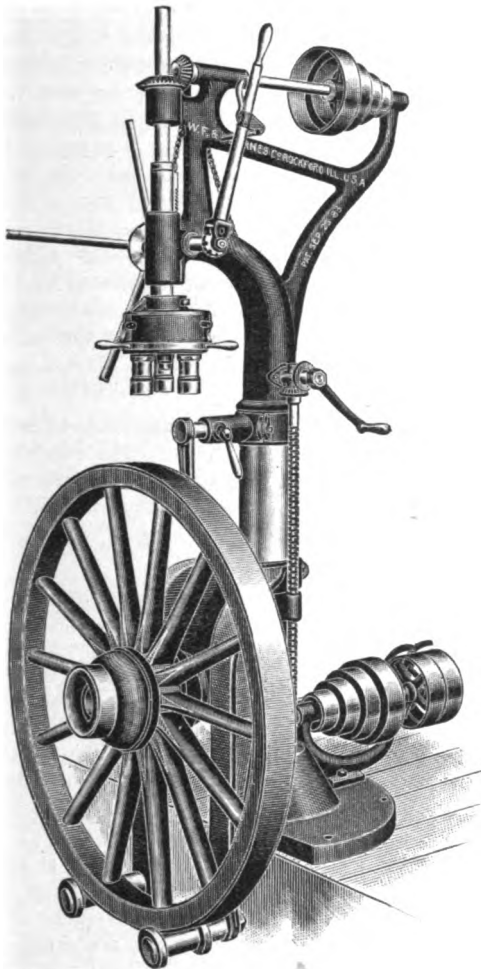
THE Enterprise Brass & Plating Works, of Cincinnati, O., have been purchased by M. C. Weiglein, who is well known to the trade as vice-president and secretary of the Monarch Carriage Goods Co. While continuing his former active interests with the Monarch Co., Mr. Weiglein will immediately increase the equipment of the Enterprise Brass & Plating Works, and make their facilities second to none in the manufacture of dash rails, seat rails, panel back rails, silver plated shaft tips, etc.

TIMKEN ROLLER BEARINGS.

It takes the same amount of power to remove a load from one point to another, whether steam, horse or hand power be employed, but by reducing friction the amount of power required can be very much lessened. In this age of improvements much has been done to lighten the labor of man, but the horse has had but little consideration. The Timken Roller Bearing Axle must be recognized as one of the horse's greatest friends. By reducing friction to a minimum, it lessens the draught of any vehicle, whether light or heavy, by more than 50 per cent.; therefore the horse does his work with less than half the exertion necessary when the old style of friction axle is used.

A NEW TIRE DRILL.

W. F. & JOHN BARNES & Co., of Rockford, Ill., have put a new tire drill on the market, an illustration of which is shown herewith, being another labor-saving device and manufactured by a well-known and reliable house, it deserves the attention of all who are interested in labor-saving machinery in this line. The illustration needs but little comment, as it shows clearly all the parts in detail. The turret mounted on the main spindle carries three separate spindles. By releasing the lever on the turret it moves with perfect ease, locking it in position ready for drilling. Only one of the three spindles revolves while drilling. The drill is intended to be mounted



TIRE DRILL.

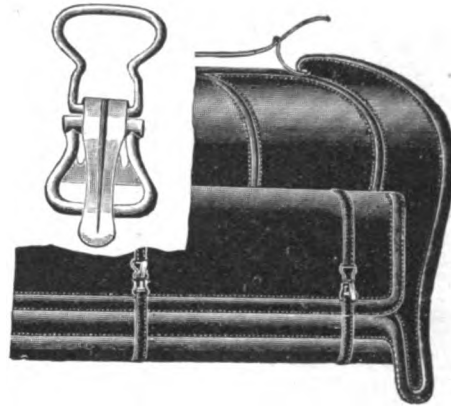
over a pit, so that any size wheel can rest on the frame. At the bottom of this frame is a set of rollers having adjustable collars, adapting it to any width of tire. At the middle of the column of the drill is an adjustable plunger, against which the top frame of the wheel rests while being bored. The drill is capable of holding wheels up to 56 in. diameter, and of any width of tire up to 6 in. wide, also any diameter of hub up to 10 in. The holes in the spindles are of a No. 2 Morse taper. The object of the three spindles is to provide a nest of drills so arranged that one can be used for a large size drill; another for a smaller size drill, and the third for countersinking, thus saving time in making changes. The machine weighs about 900 pounds. The company will be pleased to send details and prices to any who are interested.

C. SCHRACK & CO.

THE old firm of C. Schrack & Co., varnish and color manufacturers, of Philadelphia, Pa., have forwarded us a one-foot rule bearing the firm's name, their street address, and the names of the goods made by them. As this company work by the rule in every respect, and their goods are always uniform and reliable, such a reminder as a standard foot rule becomes exceedingly appropriate.

NEW SPECIALTY IN THE CARRIAGE TRADE.

WE wish to refer the trade to the advertisement of the Weld Manufacturing Co. on another page. The cut herewith represents their new carriage dash hook. This is something long needed in the trade, and which evidently seems to fill the bill, and they are



CARRIAGE DASH HOOK.

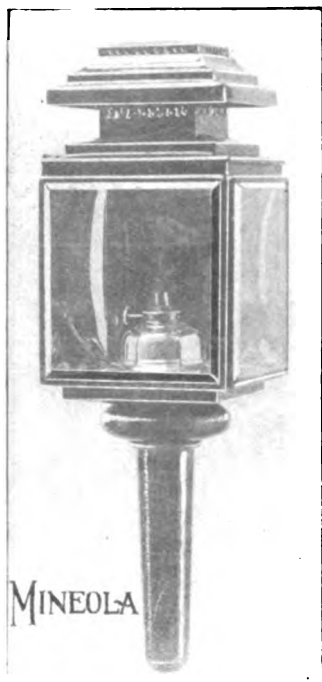
having great success in placing them on the market, they being sold at a much lower price than the dash hook usually offered to the trade. The Weld Manufacturing Co. have had years of experience in making buckles and spring fasteners for the rubber and shoe trades, and can guarantee this article as first class in every respect, and will give entire satisfaction, as it has lasting spring life to it and tightens the boot when fastened. This company is also in a position to make specialties of any kind for the carriage trade or in carriage hardware. They have a large and well-equipped plant both at Bridgeport and Waterbury, and are prepared to turn out carriage hardware or carriage specialties to order.

THE SPEED WAGON.

MANY dealers during the past season had calls for a wagon that could be used for speedway purposes and road work. The building of new speedways and boulevards and the consequent revival in the trotter and pacer has brought about this demand. The proposition was a new one to most dealers, and there has been uncertainty as to where and from whom to purchase a vehicle to fulfill the wants of their customer. To the general buyer, the question of building a speed wagon appears a simple one, but after a careful study concerning it, the problem will be found to be a most difficult one. The points involved are, strength to carry the rider, rigidity to insure its running steady and true, lightness in weight and draft, symmetrical and pleasing to the eye. The bearings must be noiseless and durable. The fifth wheel, absolutely safe and so constructed that the front frame or axle will run as steady as the back that is bolted to the body. The horse must be brought close to the wagon, with plenty of clear under the front, to obviate striking. The weight of the rider must be so carried that it is distributed proportionately, and that the wagon will not rise from the ground under any circumstances when a horse becomes unruly. The bodies so constructed as to resist all force, strains and wrenching that they may be subjected to. It is most important that the riding qualities be considered; this point in connection with the others named has been a stumbling block for many builders. To the points above mentioned many more may be added, and that are known only to those who have made an exacting examination into the question. We are pleased to refer our readers to George Werner, Buffalo, N. Y., builder of the Werner speed wagons, as one who has taken up the scientific construction of that class of vehicle in a way to perfect it in all its points. The principle on which he built has been proved by actual usage and test to be thoroughly correct. The workmanship and quality of materials is of the best. Horsemen speak in the highest terms of these wagons.

THE SCOVILLE & PECK CO.

We publish herewith a review of the coach and lamp works of The Scoville & Peck Co., of New Haven, Conn., together with illustrations, which should have appeared in the February number of *THE HUB*, but owing to a misunderstanding as to date, the copy did not reach us in time. The above named company, makers of high grade vehicle lamps, traces its origin back to the New Haven Car Trimming Co., which commenced business soon after the war, in Newhallville, a suburb of New Haven. Some years later the manufacture of carriage lamps was taken up, and the company moved into the city, when the name was changed to the Edgewood Co. They manufactured a fine grade of hand-made lamps, and had a trade extending all over the United States; many of the older carriage builders of the present day can recall this company, and used its product.



In the summer of 1893, the present company, under the firm name of Scoville & Peck, purchased the lamp business, tools and machinery, and located nearer the carriage building section of the city, and shortly after was incorporated as The Scoville & Peck Co. In 1894, Mr. Peck purchased the entire interest of Mr. Scoville, retaining only the incorporated name, and for the past seven years this company has been under his direction. In this time he has demonstrated his ability as a lamp manufacturer, by placing his company among the foremost makers of high grade lamps. With him have been associated men who spent many years with the former company, in the various branches of lamp making.

In 1899, Mr. Peck designed and built the new factory now occupied by the company at 15 Wooster street. This is a three-story brick building, 100 feet deep, arranged and constructed especially for the manufacture of hand-made lamps. Its equipment is very complete, containing as it does almost an entire duplicate set of all important machines used in this class of work. Their compressed air plant used with oil for glass bending, in the beveling and bending department, is an up to date example of the progress of the company, and a very interesting feature of the business.

We show herewith a new design of hearse lamp, which is one of the finest productions of this company. Its perfect harmony of design is above question, and construction and material are of the very best. One of the correct styles in Victoria lamps for this season is also shown. The reader's attention is also called to an advertisement of the company, showing a new anti-candle burner or oil tube, which is made in various lengths, and will fit any candle cap, being inserted from the bottom of the lamp in place of the candle. This

burner overcomes all objections to the prevailing styles now used, as the adjustment of the wick is extremely simple, being readily turned up or down when the burner is in the lamp, and projecting through the candle cap no higher than a candle, thus keeping the flame from discoloring the top lining of the lamp. This company includes in its product a full line of lamps for automobiles, fitted with electricity, gas or oil burners.

A PROSPEROUS COMPANY.

W. H. PACKER & Co., carriage dealers, Saddle River, N. J., have finished building a handsome new carriage salesroom 75 x 100 feet, five stories high, well lighted and fitted up with all modern improvements. This concern is entirely separated from that of the machinery and implement building, which is 50 x 100 feet. There are few, if any, better known firms in the State, are thoroughly reliable, buy only the best grade of work, for spot cash only, and sell at small, quick profit, by which they have increased their business yearly. They are the agents for W. N. Brockway, Homer, N. Y.; W. A. Moyer, Syracuse, N. Y.; The Richland Vehicle Co., Mansfield, O.; Sturtevant, Larrabee & Co., Binghamton, N. Y.; S. P. Mart & Co. (eastern branch), Philadelphia, Pa., and Hassett & Hodge, Amesbury, Mass. They are fortunate in having as salesman Mr. E. S. Bennett, one of the popular men on the road, and one who can sell goods and make friends at the same time. Is it any wonder, therefore, that the company is a prosperous one?

FITCH GEARS.

THE Fitch Gear Co., of Rome, N. Y., report an active demand for the Fitch gears of all kinds—a demand due not only to the activity of the carriage and wagon trades, but also, in this case, to the high grade of gears furnished by this company.

"CROWN" VEHICLES.

HODGES VEHICLE Co., Pontiac, Mich., have issued their 1901 catalogue, illustrating a line of vehicles manufactured by them, such as the road wagon, runabout, driving wagon, bike wagon, stanhope, surrey, Concord, etc. Send for a copy of their catalogue.

WOOD VS. WIRE WHEELS.

THE following communications have been received in regard to the relative merits of wood and wire wheels. The question is an interesting one, and we trust that we will hear from others on this subject. Our columns are open to the advocates of each.

SYRACUSE, N. Y., March 9, 1901.

THE HUB, 24 Murray Street, New York.

GENTLEMEN—Referring to article on page 565 of your March issue, we think the writer has expressed a number of vital points very clearly and we agree with him fully with the possible exception of the question of wood or steel rims on wire wheels which we think might depend somewhat upon the make of the tire which is used and the way the tire is applied. The point that he makes that wood wheels are not right in principle to apply traction by torsion at the hub cannot be too strongly emphasized. The point which comes, to our minds, first in discussing this subject, we have hardly seen mentioned in any of the articles we have read, *viz.*, that a wood wheel is not good unless the metal tire is so applied as to retain the dish of the wheel. With a dish in the wheel the point of the hub is thrown slightly below the horizontal when the lower spoke is plumb. We hardly think the automobile manufacturers are prepared to set the right and left arms of their axles at different angles, as it would involve some points in construction which we think would be very objectionable.

Respectfully yours,

CENTURY MOTOR VEHICLE CO.
E. L.

Editor of *THE HUB*:

DEAR SIR—An article regarding the relative merits of steel wheels versus wood has been going the rounds of the trade journals, and if the writer of that article had stopped before he touched on rim cutting, tires, etc., he would have remained on safe ground. He truly says that wire wheels with pneumatic tires are "the neatest, lightest, truest, most durable and practicable wheels that have ever been produced," because the weight is suspended from a number of

common points instead of resting on one spoke at a time, and because they can be made absolutely true, and will remain so, as they are not affected by wet and dry weather. Because of their true running qualities they lessen the draft of the vehicle materially. They are strong, light, neat and durable, but he might have added that steel wheels were impracticable owing to their lack of elasticity until pneumatic tires were introduced, and with the latter they are thoroughly practicable because the only objection is removed.

Now, when he adds that they should have rims with flared edges to prevent the tire cutting he has reached unsafe ground, because he destroys the very thing he has sought to obtain, and that is resiliency to prevent shocks to the wheels transmitted to the vehicle and the occupant. The very fact that they are a suspension wheel, and drawn taut and true to lessen the draft, and that they will not absorb vibration like wood, is proof enough that no violent shock should be transmitted through a flared edged rim. The gearing of a motor carriage needs every protection possible from shocks of this kind, and shocks transmitted through the rim to the wheel and vehicle are no more desirable on either horse or motor vehicle than they are on a bicycle, and no rider of the latter would for a moment think of having his rim extend out where it would strike stones or other obstructions in the road, as his machine would go to pieces in very short order and make riding decidedly unpleasant. Flared rims on wood wheels of course convey the shock to the gearing just the same as on wire wheels, but wood will absorb vibration at the same time it can scarcely be made true and never stays true, because it is affected by every change in the weather. Flared rims allow dirt to collect, which quickly unseats the tire, thereby lessening its life 25 per cent., besides presenting a rusty, bent and sloppy appearance.

Some of the users and manufacturers seem to forget that pneumatic tires were made to protect the vehicle and not vice versa, and when correctly made and applied there will be no rim cutting. Using tires too small in cross section for the load they have to carry is the cause of more trouble, such as rim cutting, puncturing and limited wear, than any other, but tires reinforced on the tread and the cover stock and fabric cut down to a danger point on the side is another serious source of trouble. The thickened tread is intended to prevent that bugaboo of puncturing, and the tire manufacturers, some of them at least, seem to think as there is no particular wear on the side of the tire they can remove the stock at that point with safety. This idea is erroneous; the tire is weakest at the top of the rim when reduced at that point, and the fabric will break with flared edged rims or the cover will cut with plain crescent rims, and when you see a rubber tire concern advocating rims with flared edges you will find upon examination that their tires have very little cover stock on the sides; in fact, they have cut it down to a dangerous point to cheapen costs regardless of results. Do not base your conclusions on hand samples, but on stock tires cut open.

Manufacturers of high grade carriages have used the crescent rims for years, and they would not for one moment think of using a rim which extended out and came in contact with obstructions on the road, thereby marring the rim until it spoils the appearance of the vehicle, also permits sand, dust and water to get in and unseat the tire in a short time, and make a very sloppy looking job. If you will look about you at the pneumatic runabouts which have been in use for years you will see that 99 per cent. of them are equipped with wheels having crescent rims without flared edges, and when the same are used with good tires, properly applied, you will find there is scarcely a mark on the edge of the tire. Pneumatic tires have been a success on the lighter types of motor carriages and on light horse vehicles when good tires are used and rightly applied.

By the latter we mean the proper size in cross section for the load they have to carry, and we find our data obtained during several years of experience (since the fall of 1894) that 1 1/4 in. pneumatic tires are suitable for a light (horse) vehicle that does not weigh to exceed 160 or 175 pounds and intended to carry two passengers. A 2 in. tire will successfully carry the ordinary two-passenger runabout which weighs from 250 to 300 pounds; the 2 1/4 in. will carry a stanhope or light straight sill surrey, which usually weighs from 300 to 450 pounds, and a 2 1/2 in. tire will carry vehicles weighing from 450 to 800 pounds. All of the sizes mentioned will carry greater weights for a time, but they will not carry them so long nor so successfully as the weights above mentioned, and we find that it is very much better to err on the side of getting the tires too

large for the load than to get them too small, because there is probably nothing so worthless as rubber overloaded.

One thing should be borne in mind, that there are just so many miles in a tire, and if it is used by a doctor or man-about-town, who drives one wagon all the time with five or six horses, he will wear out the tires in much less time than the man who only drives once a day, or four or five times a week, but he will get the mileage just the same if he buys good tires and properly applies them, only getting it in shorter time. A well constructed tire of good material, "when properly applied," will last fully 12,000 miles, which is three years' wear, allowing twelve and a half miles per day (a cost of one-third of a cent per day). If you are not getting these results it is the fault of the tire, not the rim.

PUNCTURES.—A record kept of sixty-eight vehicles (272 tires) for one year shows total punctures to the amount of fifty-four, less than one to a vehicle per year—not much reason for fear from that source.

In conclusion, we wish to repeat that with good pneumatic tires, properly applied, no rim cutting will ensue; punctures will be reduced to a minimum, and the "impossible" flared rims will only seem necessary to the manufacturers of cheap tires. C. M. P.

EXPIRED PATENTS.

THE following list of patents, trade-marks and designs of interest to our patrons are furnished by Davis & Davis, solicitors of American and foreign patents, Washington, D. C., and St. Paul Building, New York City. A copy of any of these may be had for 10 cents by sending to the above firm.

PATENTS EXPIRED DECEMBER 18, 1900.

- 290,251—Two Wheeled Vehicle—Joseph R. Locke, Amesbury, Mass.
- 290,257—Neck Yoke Coupling—John McKibbin, Lima, Ohio.
- 290,283—Vehicle Seat—Francis Thomas, Cincinnati, assignor to Davis and Gould & Co., same place.
- 290,349—Landau Carriage Top Lock—Oliver S. Osborn, New Haven, Conn.
- 290,374—End Gate for Wagons—John P. Ware, Mount Vernon, Mo.
- 290,437—Spring Seat for Vehicle—Chas. F. Lancaster, Fife Lake, Mich.
- 290,445—Buck-board Wagon—John M. Mayer, Rondout, N. Y.
- 290,461—Vehicle Spring—Wm. G. Mowry, Greenwich, N. Y.
- 290,462—Convertible Shaft and Tongue for Vehicles—Jacob C. Ott, Centralia, Ill.
- 290,463—Buggy-pole—Peter Papineau, Paxton, Ill.
- 290,502—Carriage Spring—Wm. VanAnden, New York City.
- 290,513—House Moving Truck—Wm. P. Aylsworth, Council Bluffs, Iowa.

PATENTS EXPIRED DECEMBER 25, 1900.

- 290,702—Wagon Standard—Peter Papineau, Paxton, Ill.
- 290,705—Top Wagon Box Fastener—J. M. Piper, Adeline, Ill., assignor to Anson M. Rank, same place.
- 290,724—Carriage Hub—Chas. K. Wilcox, Dayton, Ohio.
- 290,743—Spring Seat for Vehicles—J. Burleigh, Lawrence, Mass.
- 290,760—Wagon Axle—Samuel R. Edney, South Mills, N. C.
- 290,783—Thill Coupling, and 290,782—Thill Coupling—Bernard McGovern, Bridgeport, Conn., assignor of one-half to Edward S. Smith, Waterbury, Conn.
- 290,976—Two Wheeled Vehicle—Geo. W. Crawfoot, Tully, N. Y., assignor to H. L. Crofoot, same place, and G. H. Smith, Baldwinville, N. Y.
- 290,982—Machine for Forming Axle Skeins—Andrew C. Emmick, Columbus, Ohio, assignor to himself and E. N. Hatcher, same place.

PATENTS EXPIRED JANUARY 1, 1901.

- 291,132—Wagon Running Gear—A. J. Beach, Flint, Mich.
- 291,133—Wagon Running Gear—A. J. Beach, Flint, Mich.
- 291,134—Clip for Securing Irregular Surfaces Together—Alex. H. Beach, Flint, Mich.
- 291,131—Wagon Pole—A. H. Beach and R. W. Beach, Flint, Mich.
- 291,165—Vehicle Wheel—G. M. Dillard, Macon, Miss.
- 291,332—Wagon Tongue Support—A. H. Gleason, Wabash, Ind.
- 291,383—Wagon Seat—S. Moore, Salem, Ohio.
- 291,412—Vehicle Spring—D. P. Sharp, Ithaca, N. Y.
- 291,468—Wagon Running Gear—R. C. Blackwell, Henderson, Ky., assignor of one-half to G. Delker, same place.

PATENTS EXPIRED JANUARY 15, 1901.

- 291,873—Vehicle Wheel Hub—J. T. Brown, Indianapolis, Ind.
- 291,936—Sand Band for Vehicle Wheels—M. Raphael, Wadsworth, Nev.
- 291,942—Two-Wheeled Vehicle—F. Schelp, Jr., Ballwin, Mo.
- 291,968—Vehicle Spring—J. W. Wetmore, Erie, Pa.
- 292,001—Convertible Carriage—A. F. Felton, Stoyestown, Pa.
- 292,012—Whiffletree Coupling—W. T. Hine, West Meridith, N. Y.
- 292,019—Wagon Box—F. Lanz, Monroe, Wis.
- 292,028—Tire and Felloe for Wheels—P. W. McGuire, Lacon, Ill.
- 292,036—Spring Vehicle—H. A. Moyer, Syracuse, N. Y.

Trade News.

BY UNCLE SAM.

CONNECTICUT.

HARTFORD—The Mansuy Carriage Manufacturing Co. has brought an application to the Superior Court for a limitation of time for the presentation of claims against it and for a decree of court dissolving its corporate existence. It was said yesterday that the company had not done business for some years and that it had no debts. It has a legal existence and it was necessary that the form providing for the dissolution of a corporation be followed.

GEORGIA.

JACKSON—The Carmichael Buggy Co. is a new enterprise to be started here. A stock company composed of J. R. Carmichael, J. H. Carmichael, J. W. Carmichael and J. B. Carmichael has organized a few days ago and will manufacture buggies for the wholesale trade. They have purchased the carriage factory of Mr. J. R. Carmichael, and will begin at once the manufacture of vehicles. Mr. J. R. Carmichael is president of the company, and Mr. J. Bluma Carmichael secretary and treasurer. This enterprise has the capital to operate with, and is prepared to do an extensive business.

IOWA.

DES MOINES—W. E. Shaver, the well-known carriage maker and for years president and manager of the Shaver Carriage Co., which recently went to the wall, has announced that he expects to organize a new company soon. He claims to have ample capital to start in business with. He will make an attempt to purchase the old factory if it can be secured for a moderate price, but if it is at all high he proposes to erect an independent factory.

James Martin, connected with the firm of Getchell & Martin, the lumber men, is at the head of an organization of Des Moines men to establish a wagon factory in some city in the State of Washington. The organization will be perfected some time during the coming week. It is reported the company will have ample means and will construct an immense establishment.

The Kratzer Carriage Co. has decided upon the erection of a three-story building, 66 by 132, on its property at West First and Vine streets. It will be built immediately south of the two-story building put up last year, and will replace the one-story structure now occupied by the offices and salesrooms. The new building will be erected late in the season, and in all probability work on it will not be commenced before August 1. It will be the last improvement of those the company set out to make a year ago, and will complete the plans for the doubling of the capacity of the plant. It will be devoted almost exclusively to the manufacturing department, and will give the company three big buildings. The building erected last fall is three stories high, including a half basement, and is 66 by 132 feet. The new building will have one additional floor. The third building is 132 feet square and two stories high.

INDIANA.

AURORA—The Ohio Valley Buggy Co.'s plant, when completed at this place, will employ over 200 men.

KENTUCKY.

LOUISVILLE—The Kentucky Wagon Co. will increase its capital to \$1,000,000 by issuing \$152,000 in stock at 150 to stockholders, paying for all or part of the \$325,000 bonds. Business has greatly increased.

LOUISIANA.

SANDERSVILLE—Lindsey & Co.'s wagon factory was totally destroyed by fire on February 21. The plant was valued at \$10,000 or \$12,000. Insurance covers about one-third of this amount. This is a considerable loss to the town, as the factory employed a large number of men.

MISSISSIPPI.

LAUREL—Laurel is to have a wagon factory, the work on which will begin at once. The Lindsey wagon factory, the plant of which was burned at Sandersville a few weeks ago, will be moved here and rebuilt, and the capital stock increased to \$50,000. The incorporators are S. W. Lindsey, John Lindsey, J. E. Parker, W. F. Rumble and F. W. Pettibone.

MAINE.

OLD TOWN—J. W. Sawyer & Son are building an addition on their carriage salesrooms on Main street, and will carry a larger stock than ever.

MARYLAND.

BALTIMORE—The Road Drivers' Association of Baltimore City has been incorporated by Messrs. Ormond Hammond, William H. Evans, Patrick Martin, Samuel A. Rice, Michael Sheehan, Thomas Ryan, William J. Martin, John J. McElroy, Gustavus A. Janszky and Frederick Bucher, of Baltimore city, and Herman Bernheimer, Granville O. Wilson, Hart B. Holten, Thomas F. Graecen and Richard Hentschel, of Baltimore County. The

- 292,039—Axle Repairing Tool—F. S. Packard, Rockville, Conn.
 292,143—Vehicle Wheel—P. H. Stein, Austin Tex., assignor of one-half to J. W. Shepard, same place.
 292,139—Wagon Brake—J. D. Russell, North Hamden, N. Y.
 292,072—Wheel—D. Tice, Lockport, N. Y.
 292,147—Spring for Vehicles—C. L. Thomas, Hornellsville, N. Y.

PATENTS EXPIRED JANUARY 22, 1901.

- 292,151—Vehicle Seat Spring—W. R. D. Allen, Hardman, Ore.
 292,201—Carriage Spring—T. H. Bevans, Kalamazoo, Mich.
 292,277—Road Cart—C. S. Beebee, Racine, Wis.
 292,291—Carriage Seat—W. A. Eddy, Randolph, N. Y.
 292,385—Wagon End Gate—H. P. Swenson, Racine, Wis., assignor to Mitchell, Lewis & Co., same place.
 292,419—Carriage Spring—G. E. Dolton, St. Louis, Mo., assignor to C. C. Nitsche, same place.
 292,424—Wagon Bolster—N. Faught, Pittsborough, assignor of one-half R. N. Miles, Indianapolis, Ind.

PATENTS EXPIRED JANUARY 29, 1901.

- 292,480—Two-Wheeled Vehicle—H. P. Garland, San Quentin, Cal.
 292,526—Device for Closing Carriage Doors—H. W. Yonley, Denver, Col.
 292,558—Carriage—R. C. Huse, Georgetown, Mass.
 292,600—Wagon Running Gear—A. H. Todt, Lapeer, Mich.
 292,617—Vehicle Wheel—W. C. Barr, Jersey City, N. J.
 292,740—Spring Vehicle—P. Englehart, Modisto, Cal.

PATENTS EXPIRED FEBRUARY 5, 1901.

- 292,811—Spring Gear for Buggies—J. R. Hawkey, Park Hill, Ontario, Canada.
 292,900—Running Gear for Vehicles—W. A. Dawson, Stony Point, Cal., assignor of one-fourth to E. K. Evans, same place.
 292,896—Two-Wheeled Vehicle—F. Colman, Ilion, N. Y.
 292,941—Buggy Top—D. Nunneley, Keen, Ky.
 293,094—Two-Wheeled Vehicle—A. F. Sargent and R. D. Farrel, Geneseo, Ill.
 293,173—Thill Coupling—E. Hoxie, Red Creek, N. Y.

PATENTS EXPIRED FEBRUARY 12, 1901.

- 293,218—Anti-Rattler for Thill Couplings—J. N. Berry, Boston, Mass.
 293,219—Vehicle Spring—G. E. Blaine, Ringgold, Ga.
 293,283—Draft Equalizer—J. W. Steel, Goshen, Ind.
 293,307—Spoke Extractor—R. N. Caughell, Sheed, Ore.
 293,323—Two-Wheeled Vehicle—G. Guenre, Santa Rosa, Cal.
 293,341—Thill-Coupling—O. Mehurin, Newark, Ohio.
 293,498—Wheel—J. B. Neff, Burlington, Iowa.
 293,572—Two-Wheeled Vehicle—H. Greenfield, Harrison, N. J., assignor to Hincks & Johnson, Bridgeport, Conn.
 293,522—Carriage Curtain Fastening—J. Sage, Lockport, N. Y.
 293,251—Wheel—G. W. Howell, Covington, Ky.

Obituary.**W. E. GRAMLING.**

W. E. GRAMLING, a well known carriage and wagon manufacturer of Marietta, Ga., died on February 25, of blood poisoning. Mr. Gramling was at work in his shop, when a small piece of steel flew off his hammer and went into the middle finger of his left hand. Mr. Gramling was about fifty-five years of age at the time of his death, and had been identified with the business interests of Marietta for the last thirty years. He was a member of the Methodist Church and of the Masonic fraternity.

WILLIAM C. GLESENKAMP.

WILLIAM C. GLESENKAMP, member of the family so well known for its identification with the carriage making business in Pittsburg, Pa., and who was one of the firm of West & Co., carriage makers, died February 26, at the home of his father, William Glesenkamp, Sr., 1225 Locust street, Allegheny. He had not been in good health for some time. He was unmarried and is survived by his father, a brother and sister. He was forty-two years old.

JAMES P. LANGDON.

JAMES P. LANGDON, president and manager of the New Brunswick Tire Co., died at his home in New Brunswick, N. J., on March 11. He was seventy-seven years old. Mr. Langdon was for many years with the Goodyear Rubber Co., and went to New Brunswick in 1854 to become superintendent of the New Brunswick Rubber Co.

CLARENCE L. SMITH.

CLARENCE L. SMITH, draftsman with the H. H. Babcock Co., of Watertown, N. Y., died of pneumonia on February 4, after six days' illness. He was about thirty-seven years of age, an expert body maker and draftsman, and a man of great promise. He was a prize winner in our Technical School, from which he graduated in 1895. By his death the carriage industry loses a valuable member. He leaves a widow and one child.

objects are to assist in making and maintaining public and private roads and to foster the breeding and training of light harness horses. There is no capital stock.

HAGERSTOWN—The Hess Carriage Co. has been incorporated with the following officers and directors: John G. Hess, president; M. E. Hess, secretary and treasurer; V. M. Hess, vice-president; J. Frank Roessner, William B. South, directors. The capital stock is \$20,000.

MASSACHUSETTS.

AMESBURY—Ward Burbank has purchased the Samuel Rowell carriage factory buildings, situated near the B. & M. railroad tracks. Burbank Bros., carriage manufacturers, are to occupy them.

Business at the factory of S. R. Bailey & Co. is rushing, and they are now turning out five of the finished Bailey Pneumatic Whalebone Road wagons daily.

BOSTON—James A. G. Fraser & Co., carriage maker, this city, has assigned to R. J. Todd.

FRANKLIN—E. F. Murphy has opened a paint shop for carriage and sign painting over R. A. Stewart's wheelwright shop.

LOWELL—The blacksmith and paint shops of Edward F. McCoy, carriage maker, was destroyed by fire on February 24. The loss is variously estimated at from \$1,000 to \$1,500. There was no insurance on the blacksmith and paint shops.

MANSFIELD—The business of the Fuller Carriage Co. is now exclusively under the management of Mr. Herbert C. Fuller.

MICHIGAN.

IRON MOUNTAIN—The Hegmeister Building was completely destroyed by fire on February 23. It was occupied by the Sol Noble Carriage Depository. Loss on building, \$2,000; insurance, \$750. Loss on carriages, \$4,000; no insurance. An overheated stovepipe was the cause of the fire.

PONTIAC—Martin Halfpenny has leased a building on South Saginaw street, and will open a carriage factory. Mr. Halfpenny was formerly connected with the Martin Halfpenny Vehicle Co. and the Halfpenny Giles Co. The building will be remodeled and fitted up for factory purposes.

MINNESOTA.

FARIBAULT—The Chicago Vehicle Co. branch here is discharging some of its men prior to making new financial arrangements to enlarge its business, the experiment having proved highly successful and the ten vehicles now in hand having been completed. It expects to begin manufacturing automobiles on a much larger scale, and has already begun the work of reorganization.

MINNEAPOLIS—Articles of incorporation of the Gregg-Seager Co., of Minneapolis, were filed with the Secretary of State February 21. The company is capitalized at \$100,000, and will engage in the business of manufacturing and selling hardware, wagon stock, etc. The incorporators are William C. Gregg, of Honolulu; H. W. Seager, C. E. Stafford, J. L. Dahl and David W. Sneddon, of Minneapolis.

NEW YORK.

BAINBRIDGE—A. V. Marlette is closing his wagon making and repairing business, and will remove his family and establishment to his former home in Whitney Point.

BALLSTON SPA—N. P. Fournier's wagon shop, on Division street, was burned on February 22. The loss was \$2,500. A large quantity of furniture and other articles were burned. Mr. Fournier had no insurance.

BROOKLYN—Moser Palace Carriage Co., of Brooklyn; capital \$200,000; directors, W. M. Clark, F. H. LaRoche and J. J. Byrne, Brooklyn.

BUFFALO—The certificate of incorporation of the West Side Wagonette Co., of Buffalo, has been filed with the county clerk. The capital stock is \$50,000, and the directors are Charles F. Dunbar, H. J. Koch, R. L. Cox and J. T. Dunn, all of Buffalo. The company will run wagonettes from various parts of the west side of the city to the exposition grounds next summer to supplement transportation by the street cars.

CAMDEN—James W. Stark, the well-known carriage and wagon maker, has this week added a new department to his business. He has leased the building and premises just north of his factory and purchased the blacksmithing outfit of Frank Spavin, who has conducted a blacksmith's business at that point for several years. Mr. Stark has engaged James Witchley to have charge of the work. Mr. Spavin has moved with his family to Vernon.

CORTLAND—The Newton wagon top manufactory has built up a flourishing trade in automobile tops, and may have to enlarge its capacity in order to supply the demand.

GROTON—Groton Carriage Works, of Groton, Tompkins County—Capital, \$250,000; directors, Frank Conger, Jay Conger and W. M. Marsh, of Groton.

MIDDLEBURG—Harvey Bice has opened a carriage paint shop in the Patterson Building, on Railroad avenue.

MOUNT VERNON—The Park, Colville & Herrick Co., wagons and carriages. Capital, \$50,000.

NEW YORK CITY—C. A. Carey, carriage builder, will soon move from 242-244 West Fifty-fourth street, to his new factory at 34 West Sixty-sixth street. Mr. Carey has been in the carriage business for twenty years, and has found it necessary to procure larger and more convenient quarters.

OWEGO—The Champion Wagon Co. is receiving orders for so many wagons that it may find it necessary to enlarge the shops and the office.

ROCHESTER—Mr. C. H. Payne, for many years with the Babcock Carriage Co., and late with the R. J. Smith Carriage Co., has arranged with the Watertown Carriage Co., to carry their full line of vehicles, consisting of fine carriages, road wagons, business wagons, harnesses, robes, blankets, whips, etc. Mr. H. W. Marsellus, who for the past seven years has been engaged in the wholesale carriage trade on State street will occupy a portion of the repository with Mr. Payne and conduct a wholesale business, handling the Noyes Carriage Co.'s vehicles, Fisk farm and team wagons, Donaldson bob sleighs, etc. Mr. Marsellus is the general agent of New York State for these lines, and will do a general wholesale business in the future as he has done in the past.

SYRACUSE—The carriers of the Syracuse Post Office are to be equipped with a wagon of unique and substantial design, a contract for eleven wagons having been awarded by the Post Office Department to Harvey A. Mover, of this city, which will be put in service about April 1. The contract price for each wagon is \$85. The wagons will be of substantial build, with hood to protect the driver. The running gear will be painted vermilion and the tops black. On the side of the wagon will be the letters "United States Mail."

WARWICK—James A. Smith and James M. Hulse have formed a partnership to begin April 1, when they will work together in the shop now occupied by Mr. Smith on Spring street.

NEW JERSEY.

JERSEY CITY—Work on the new carriage factory of Joseph R. Wilson on the site of the one burned to the ground several months ago at Bowers street and Palisade avenue, is rapidly progressing. The new building is to be two stories in height, and will be built as nearly fireproof as possible.

NORTH CAROLINA.

GOLDSBORO—At a recent meeting of the directors of the Goldsboro Buggy Co., Mr. David Pool, of Cincinnati, was elected superintendent.

OHIO.

CINCINNATI—The Albert Schneidler Co., of Cincinnati, incorporated; capital, \$50,000, to manufacture and deal in carriage woodwork; incorporators, Albert Schneidler, William Bettinger, Louis F. Borntraeger, George Reuter and Albert Bettinger.

Thomas Corcoran & Sons, carriage lamp manufacturers, will soon build a new three-story factory, 78 by 120 feet, on Hunt street, near Woodward.

CIRCLEVILLE—The Colonial Carriage Works, the largest in this city, burned February 13. Loss, \$25,000; insurance, \$17,000. The works will be rebuilt.

CLEVELAND—Henry H. Garrard, of this city, who has been in the carriage business for the past twenty years, has sold out to the Squires Carriage Co.

The Standard Vehicle Co., located at No. 26-38 Broadway, who have been located there for the past six years under the management of C. F. Emery, has also sold out the Squires Carriage Co. They carry a stock of about \$18,000. This gives them the control of the cheap and medium grade line of pleasure vehicles, also the factory delivery wagon and the farm and graders' wagon line. They will occupy the plant of the Standard vehicles and close the Garrard plant. The company will now have three large repositories, the one on Huron street being the finest in the State and stocked with only high grade vehicles. Business has opened up very lively with the company. Their heavy carriage and depot wagon trade has been very good this winter. Have sold a good many pleasure vehicles mostly of the Columbus Vehicle Co., Anderson Carriage Co., and the Staver Carriage Co.

COLUMBUS—Fire in the storage room of the Columbus Buggy Co.'s works, on March 2, containing about 300 buggies, caused about \$3,000 damages. A serious conflagration was prevented by the automatic fire extinguishers, which prevented the spreading of the flames before the fire department, which responded promptly, arrived. From fifty to seventy-five buggies were so damaged by fire and water that they will have to be taken apart, repaired and painted. About \$200 damage was done to the building, and the loss on the buggies will be about \$2,800. It is believed the blaze was started by a spark from a switch engine.

SPRINGFIELD—A \$2,500 building permit for a brick carriage factory was issued to Kugua & Sons recently by City Clerk Lantz. It will be erected in Columbia street, just east of Monument Square.

WARREN—W. J. Kerr, of the firm of Henderson & Kerr, who sold out to Morgan & Williams, will begin at once to erect a carriage factory which will have 9,000 feet of floor space. Work will be commenced March 1, and the firm name will be W. J. Kerr & Co.

PENNSYLVANIA.

PITTSBURG—The shop of James G. Weir & Sons, wagon makers, at No. 1325 Liberty avenue, was damaged by fire to the extent of \$5,000 on March 5. The flames swept the entire interior of the building and wrecked the plant. The cause of the fire is not known. The loss, principally on tools and stock, is fully insured.

PHILADELPHIA—At a meeting of the Carriage and Wagon Builders' Association of Philadelphia, at the Bourse, on March 15, the following officers were elected: President, B. Frank Duffield; vice-presidents, Frank W. Shriver, George Waldman, Chris. Preisendanz; secretary, Henry F. Keachline; treasurer, Frank Schanz; executive committee, Reed Preisendanz, George E. Lengert, August Haldrich. The association will hold its annual banquet at Tagg's Maennerchor Hall, Franklin and Fairmount avenue.

R. M. Braithwait & Co. have closed a contract with J. Sims Wilson to build a five-story carriage shop addition, 36 x 48 feet, on the west side of Watts, north of Mount Vernon street. The estimated cost of the work, which will be started on April 1, is \$9,000.

RHODE ISLAND.

WOONSOCKET—Fred. L. Cleveland, Eva J. Cleveland and Elwin E. Southwick, all of Woonsocket, have been incorporated under the name of the Woonsocket Wagon Manufacturing Co., the purposes of which are the buying, selling and dealing in wagons and other vehicles and the conducting of a general horse shoeing, wheelwrighting and blacksmithing business in Woonsocket. The capital stock is \$10,000.

SOUTH CAROLINA.

COLUMBIA—Vandy Myers has moved into his new warehouse and again started up his carriage and buggy factory on Assembly street.

TENNESSEE.

CHATTANOOGA—It was reported yesterday that the Chattanooga Buggy Co. is preparing to enlarge its plant and expand its business. The factory is located on Pine and Eighth streets. The enterprise has been very successful since it was started, and the enlargement follows the careful management of the business by the present proprietors.

FLORENCE—Dr. A. D. Bellamy, president of the Florence Wagon Works, has been to Cincinnati and has purchased new machinery for the plant.

NASHVILLE—A. R. Miller, master mechanic of the Florence Wagon Works, has been buying new machinery for the factory. \$20,000 will be spent in machinery and improvements.

VERMONT.

NORTHFIELD—C. V. Kent is putting up a building 100 x 25 feet near his residence on Central street, the second floor of which will be utilized as a carriage and sleigh repository.

STOWE—Peter Quinn, who recently moved here from Boston, opened the old Quinn paint shop on Main street last Monday for sleigh and carriage painting, as well as all kinds of job work.

VIRGINIA.

PETERSBURG—The promoters of the hub and rim factory have purchased a lot in the western part of the city and will at once begin the erection of a building for their plant. This manufactory has been in existence in Dinwiddie County for several months, and is removed to this city because the facilities here are much better than they are in the county. The new plant will give employment to a large number of workmen.

WASHINGTON.

SPOKANE—The Diamond Carriage Co., of which Messrs. Jacques & Mountain are proprietors, have removed their carriage and wagon factory from the corner of First avenue and Lincoln street to their new and larger location, 1024-26 Sprague avenue, below Monroe. The change was necessitated by the increase of business, which required more room. This firm has been established since 1892, and the quality of work done by them in the repairing and manufacture of fine buggies, wagons and trucks is well known.

EVERETT—Among the new industries of the city comes now a carriage, wagon and truck factory. Mr. Bishop and his partner, late of Walla Walla, are the proprietors, and have secured a site on Broadway, near Hewitt avenue, for the building. They are experienced men in their line, and propose to operate an up-to-date plant.

WEST VIRGINIA.

PARKERSBURG—I. H. Wright, the well-known carriage dealer on Third street, has entered a petition in bankruptcy, and the papers are now in the hands of Referee G. W. Johnson.

WHEELING—Donaldson, Morgan & Co., the South Main street carriage and wagon builders, will remove May 1 to the old J. W. Hunter building at the south end of the Main street bridge. The volume of business done by this firm the past year made this

demand for more room absolutely necessary, as it was impossible to properly show the varied and large stock of merchandise to good advantage in their crowded condition. This increased business is most flattering to Mr. Dudley's efforts, and is a sure indication that his honest and upright business methods, coupled with good sound judgment in selecting the proper and most reliable goods, has been fully appreciated by his patrons.

Wants.

Help and situations wanted advertisements, one cent a word; all other advertisements in this department, 5 cents a word. Initials and figures count as words. Minimum price, 30 cents for each advertisement.

SITUATIONS WANTED.

New York City foreman carriage painter desires position in New York City or New Jersey. Highest grade work. All stripper and finisher. Address, "D. W.," care of THE HUB.

Wanted—Position as foreman of carriage paint shop. Competent to run any shop and handle any number of men. Prefer heavy automobile work. Understand enameling in colors. Address, "PAINTER, BOX 62," care of THE HUB.

Position wanted by an experienced, practical, economical manager and superintendent. Expert designer and organizer. Matured judgment and tact. Unexceptional references. Carriage or automobile factory. Address "CAPABLE," care of THE HUB.

Experienced paint and varnish salesman desires to make change. Best references. Address, "VARNISH," care of THE HUB.

A first-class carriage designer and practical constructor, who is also mechanical draftsman, having had several years' experience on machinery on motor carriages. I am a practical mechanic and artistic designer, and have had several years' experience with some first-class carriage builders. Am familiar with both light and heavy work. A position with a large firm preferred, where the services of a first-class man would be appreciated. Address, "BOX 61," care of THE HUB.

HELP WANTED.

Wanted—Two trimmers on landaus and coupés. RIDDLE COACH & HEARSE CO., Ravenna, O.

Wanted—Hustlers to secure new subscribers for THE HUB. A good chance to make money easily. Subscription price, \$2.00 a year. Liberal commission paid. Address Subscription Department, THE HUB, 24-26 Murray street, New York.

Wanted—Wheel hands, rimmers, spoke drivers, finishers, etc. Address, "B. C. BOX 63," care of the THE HUB.

Wanted—A good carriage trimmer to work on repairing and new work of all kinds. Good position and steady work all the year round for sober, competent, industrious man. RADKEY'S CARRIAGE FACTORY, Austin, Tex.

MATERIALS WANTED.

PATENTS—H. W. T. Jenner, patent attorney and mechanical expert, 608 F street, Washington, D. C. Established 1883. I make an examination free of charge, and report if a patent can be had and exactly how much it will cost. Send for circular.

FOR SALE.

Solid rubber tire patent. Entirely new principle. Cannot get off the rim. Economical. Experienced tire men say it is the best they have ever seen. For particulars, address "RUBBER TIRE," care of THE HUB.

For Sale—One White tire shrinker, screw feed, belt power, complete with dies. Will sell cheap. "PARRY MFG. CO.," Indianapolis, Ind.

BUSINESS OPPORTUNITIES.

I am authorized to find a buyer for the controlling interest in one of the best carriage and buggy plants in Ohio or the entire country. The gentleman who desires to sell his interest has made his fortune out of it, and has reached the age when he desires to retire. The stock is worth above par to-day, but if the right party can be found, a controlling interest would be sold to him at 75 cents on the dollar, with only a limited amount of cash to be paid down, the balance to be paid in annual installments. The capital stock is \$80,000. Plant is located in one of the best towns in Ohio, central, and has best of railroad facilities. High grade work and averages about 4,500 jobs a year. Shop has capacity to build 10,000 of a cheaper grade. For full particulars, address, "EXCEPTIONAL OPPORTUNITY," care of THE HUB.

COLOR SECRETS.

No. 39.—Bottom Facts.

Murphy Colors are just as good as Colors can be made. Let us explain what we mean.

Of course, we do not mean that we can put into a medium-priced color the material which costs us more than the color costs you. We do mean that we put in the very best material the price will bear. How do you know that? You don't know it, and you can't know it, when you buy the color. Anybody can cheat you on color. You'll find out the cheat, as the bad boy's father found out that the shot gun was rammed with slugs till it had to burst in firing: but knowledge, coming late, is vain. You will know all about Color after you have used it. You can know nothing about it when you buy it. You CAN accept the Murphy name as a guarantee.

We also mean that, whatever the grade of material, each color is perfectly made: and that is half the battle. In fact it is all the battle; for the finest material if not perfectly treated is spoiled. We mean that Murphy Colors are ground until they have no grit: and such work requires better machinery and greater care than any man appreciates who has not studied the business. We mean—and this is very important—that every color can be absolutely duplicated. Duplication—not resemblance—is a fine art of scientific knowledge and skill. We do it. And yet again—and most important of all—our “samples” are not selected; which means that every batch is a sample batch. No goods below the exact standard leave our factory.

MURPHY VARNISH CO.

Please mention "The Hub" when you write.

SUPERIOR STRENGTH



PHINEAS JONES & CO

NEWARK, NEW JERSEY.

Please mention "The Hub" when you write.

THE TRUTH

Wood Rims for Wire Wheels are
lighter than steel, more resilient,
affording an action of buoyant
tendency in the wheel adapted
to absorb and withstand the stress
of vibration or the shock of im-
pact with an article in its path.

It is not a question of theory, but of fact; "*American Wood Rims*" are stronger than other rims of any sort. If you will write us, referring to this advertisement, we will be pleased to send you a sample section or a complete rim adapted to any style of wire wheel you may be using.

American Wood Rim Co.,

BRADFORD, PA., U. S. A.



CRANE & MACMAHON,

NO. 18 SOUTH STREET, NEW YORK.

FACTORIES:

VIRGINIA and NORTH CAROLINA WHEEL CO., ST. MARY'S SPOKE WORKS,
and WAPAKONETA BENDING CO.

WHEELS SARVEN, WARNER,

and WOOD HUBS, Heavy and Light. Heavy Wheels for Business Wagons a Specialty.

MANUFACTURERS OF ★ BRANDS OF
CARRIAGE AND WAGON WOOD STOCK,
RIMS, SPOKES, HUBS, ETC.,
AND HARDWOOD LUMBER.

SEND FOR CATALOGUE AND PRICE LIST.

The Hickory Nut Brand is made of Second Growth Hickory Rims, Spokes and Elm Hubs.

The Acorn Brand is made of Second Growth Oak Spokes, Bent Oak Rims or Sawn Felloes. Thoroughly Seasoned Stock.

G. W. SEBOLD, Pres't

J. H. BEACHLEY, Vice-Pres't

P. S. BARRICK, Sec'y.

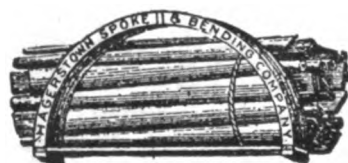
S. A. MUNN, Treas.

A. S. HARRIS, Sept.

The **Hagerstown Spoke & Bending Co.** Hagerstown, Maryland,
U. S. A.

MANUFACTURERS OF

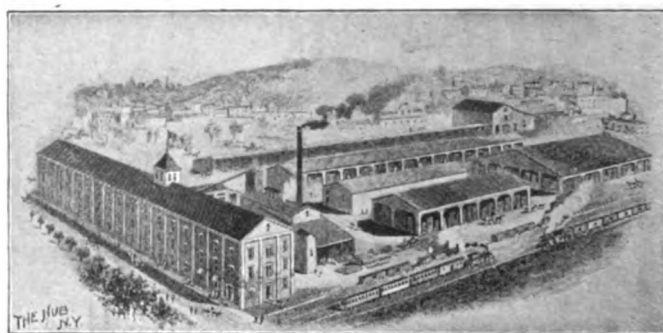
Spokes and Rims



EXPORTERS OF

HARDWOOD, OAK,
HICKORY AND WALNUT
LOGS AND LUMBER.

The celebrated
"Horseshoe"
brand, of which
we export
largely. All
Foreign and
American
patterns of
Spokes.



A. B. C. Code Used.

Correspondence Solicited.

Cable Address, "SEBOLD"

BURR PATENT WHEEL



PATENTED JAN. 25, 1898.

Advantages in the BURR WHEEL:

- Large Hub, suitable for any kind of Axle. ✦
- Long and heavy tenons on spokes. ✦
- Long shoulders on spokes. ✦
- A flanged wheel with staggered spokes. ✦
- A rivet on each side of every spoke; none passing through the spokes, using twice the number of rivets used in other makes of wheels. ✦
- A light wheel, both in weight and appearance. ✦
- A wheel that will stay in dish. ✦
- A wheel that will stand in the hub. ✦
- Easy to repair. Three times stronger at the hub than any other wheel made. ✦

---WRITE FOR PRICES.---

BURR WHEEL Co.,

CAMPBELL AND PARK AVES.,

... CHICAGO, ILL. ...

Please mention "The Hub" when you write.



The Best at the Price of the Cheap.

Wire wheels with hubs attached, any size or style, for either solid or pneumatic tires.

Our plant is the best in the United States, fully equipped with up-to-date labor saving machines.

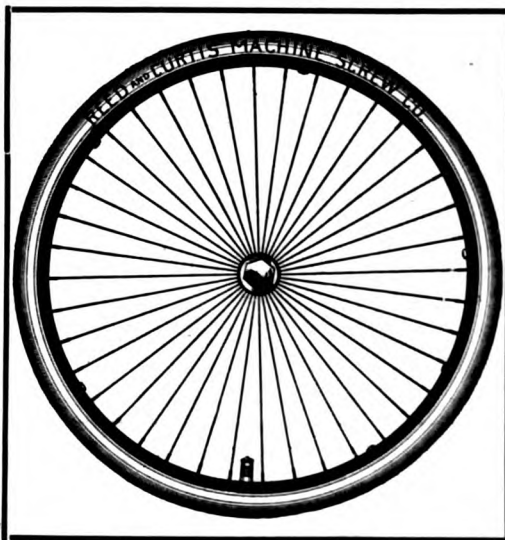
No order will be too large for us to handle. All orders will be filled promptly.

We will always carry a large supply of hubs turned from the bar, or hubs of the tubular type, and we will sell them at the same price that you are now paying for cast iron, or any other cheap grade hubs.

Before placing your contract be sure and see our line and get our quotations.

WRITE FOR CATALOG "D."


REED & CURTIS MACHINE SCREW CO.,
WORCESTER, MASS.

FRENCH STYLE WOOD HUB COACH WHEEL.



Wooden
Vehicle

WHEELS of every description

WITH OR WITHOUT

Steel, Iron or Rubber Tires.

Edward Stinson & Co.

...MANUFACTURERS...

PRICE MODERATE ::

BEST WORKMANSHIP

327-335 North St., BALTIMORE, MD.

HOOPES BRO. & DARLINGTON

WESTCHESTER, PA., U. S. A.

Makers
of...

WHEELS

For

**Carriages,
Automobiles,
Business Wagons
and Trucks.**

Warner, Sarven, Kenney, Sweet, Wood Hubs.

THE WOODS is full of CHEAP NECK YOKES and NECK YOKES CENTERS, but when a carriage manufacturer wants a good, safe yoke for his own use he always buys COVERT'S. You should insist upon it and accept no other.



Our assortment supplies the demand in the States and foreign countries for any style of yoke or centre.

Every Yoke is Tested and Every Centre is made of Oak Tanned Harness Leather.

COVERT'S SADDLERY WORKS

1875



1900

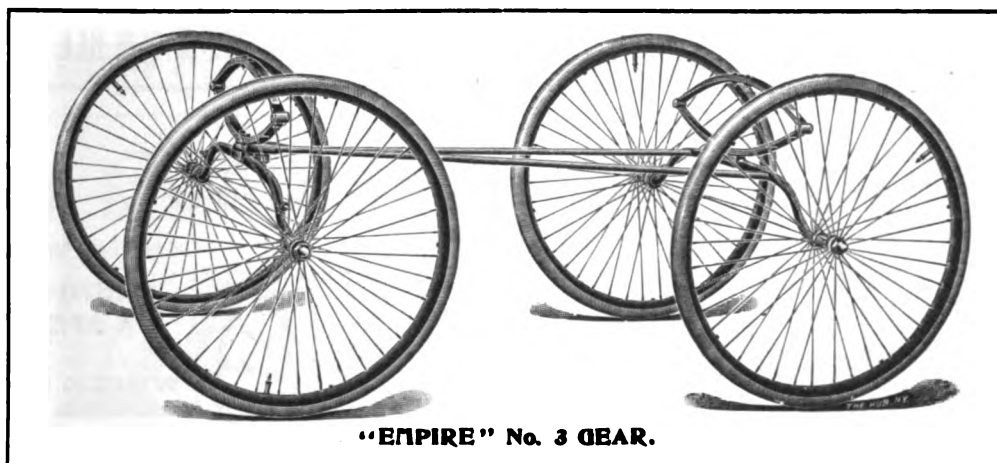
We are the oldest and most extensive manufacturers of Neck Yokes and Neck Yoke Centres. Also Harness Snaps, Horse and Cattle Ties, Wagon Jacks, etc., etc. Ask your jobber for Covert's.
FARMER, N. Y., U. S. A.

Please mention "The Hub" when you write.

The S. A-F. E. Company's

Pneumatic Gears, "Empire Model," are the best that can be produced. The Chicago Screw Co. build the celebrated Empire Ball Bearing Axles, and the Empire Gears are made under the same supervision.

We not only claim superiority of material and workmanship, but the finish and style command the respect and admiration of the artistic carriage builder.



"EMPIRE" No. 3 GEAR.

CONSTRUCTION.

FIFTH WHEELS—The gear shown above is equipped with our **cushioned** fifth wheel, which has just friction enough to prevent the shafts swinging; still they turn easily on the axle and will not rattle. The cushion stops the vibration, thereby insuring longer life to all other parts of the gear. The "stop" can be adjusted for any width of body.

SHAFT COUPLINGS—Our shaft couplings are a great feature of these gears. They are simple, safe and stylish, and consist of only two pieces of forged steel. They have no **Bolts, Nuts, Screws, Rivets, Springs or Straps**. Are dust and water proof, and will not rattle. The shafts can be removed from the gear in one second; change from shafts to pole in five seconds, **WITHOUT TOOLS**.

REACHES—We use tubular reaches on all gears (unless wood are ordered). The back connections are dovetailed into the axle and nicely brazed, making a flush joint, as strong as though forged solid.

WHIFFLETREE COUPLINGS—There is no bolt through the whiffletree, with pointed ends to catch the sponge, paint brush and horse's tail. They are dust and water-proof, and will not rattle.

SPRINGS—The Morrill springs are used unless otherwise ordered. They are very elastic, yet will carry a heavy load, and will not squeak or rattle.

AXLES—The axles have a high bend, and being bent hot they retain their shape under a heavy load without springing. On runabouts and other light two passenger gears we use $7/8$ in. round axles, swelled to $1\frac{1}{4}$ in. in centre; heavy Stanhopes are $1\frac{1}{16}$ in. and Surreys $1\frac{1}{16}$ in.

WHEELS—Wire or any standard type of wood wheel.

The Empire Gear is furnished with Empire Ball Bearings (interchangeable), or Osgood endless grooved boxes, which are a genuine success.

ORDER A SAMPLE GEAR and convince yourself that the "EMPIRE" is the REAL THING.

STANDARD ANTI-FRICTION EQUIPMENT Co.,

General Offices—50 Broadway, New York.

FACTORIES { CHICAGO, ILL.
WILKES-BARRE, PA.
AMESBURY, MASS.

Please mention "The Hub" when you write.

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NESS BROS. & CO.

Manufacturers of

SARVEN,
WARNER,
WOOD HUB,
BANDED HUB,
STAR OR KENNEY,
SHELL BAND,

WHEELS

CAPACITY, 100 SETS PER DAY.

Wheel Stock

ALL SIZES,
WITH OR WITHOUT
STEEL, IRON OR
RUBBER TIRES.

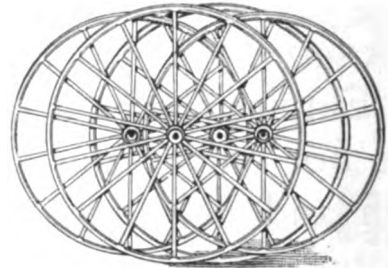
Broad and Philadelphia Sts., YORK, PA.

Write for New Catalogue just issued.

PHILIP LEBZELTER,

LANCASTER, PA.

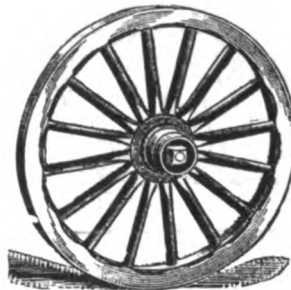
Wheel Material and Bent Wood Work.

Bike Wagon
WheelsSteel Tired
Wheels

WE PUT
BEST RUBBER TIRES ON ALL STYLE WHEELS.

CARRIAGE WHEELS

of all kinds for Domestic and Export Trade.



**AUTOMOBILE WHEELS
A SPECIALTY.**

WRITE FOR PRICE LIST.

CARR, PRESCOTT & CO.,

Successors to
BIDDLE & SMART CO. AND LOCKWOOD & BROWN,
AMESBURY, MASS.

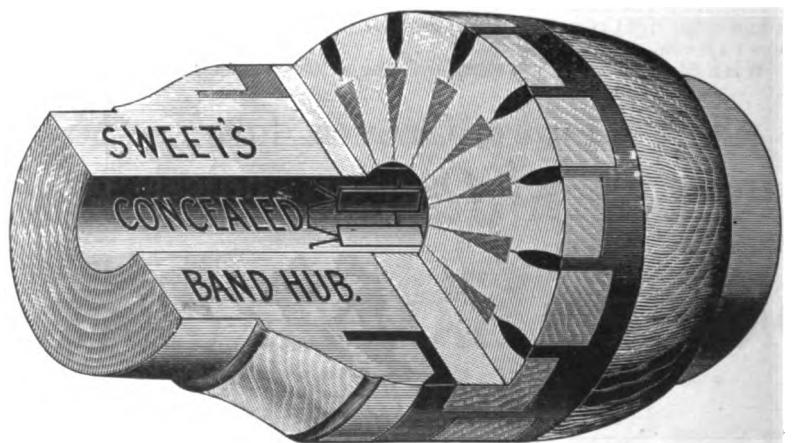
Telephone, No. 68-5.

There are Hubs and Hubs,

BUT THERE ARE
NONE SO

“SWEET”

AS THIS ONE.



MANUFACTURED INTO WHEELS BY

SHORTSVILLE WHEEL CO.,

ALSO SARVEN, WARNER,
KENNY, SHELL and WOOD
WHEELS

Shortsville, N. Y.

WESTON-MOTT CO. **WIRE WHEELS**

For Cushion, for Pneumatic, for Solid Tires
**FOR EVERY TYPE OF HORSE-DRAWN OR
MOTOR-DRIVEN VEHICLE**



Every part of every one of our Wire Wheels is carefully inspected and tested.

The Hubs are machine-turned.

The Spokes are all made from high carbon wire drawn from imported billets.

The Rims are made from the stiffest stock ever used in Rims.

The Bearings are tool ground to size.

All this is expensive—but it's necessary.

In our Wheels you simply get the best made.

And you get it every time.

Send for Booklet.

UTICA, N. Y.

FINE CARRIAGE WHEELS.

E. FLICKINGER,
President and Manager.

Capacity 500 Sets per day.

OUR TIRE PLANT ENABLES CARRIAGE AND WAGON MANUFACTURERS TO HAVE THEIR WHEELS TIRED BY EXPERIENCED WORKMEN. CAPACITY OF TIRE DEPARTMENT, 250 SETS PER DAY. CORRESPONDENCE SOLICITED.

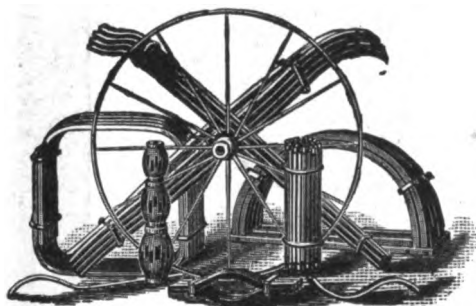
THE FLICKINGER WHEEL CO.,
MANUFACTURERS,
GALION, OHIO.

Don't Worry

If you have trouble getting finished SARVEN PATENT HICKORY SPOKES 1½ and under, write us. Our prices will surprise you. Of course we make all kinds. Write us now.

SUWANEE SPOKE & LUMBER CO.,
KUTTAWA, KY.

The Wheel and Wood Bending Company,



WHEELS

MANUFACTURERS OF

Wheel Material and Bent Wood,

Send for Catalogue.

BRIDGEPORT, CONN

J. G. ROUSE & CO.,

Carriage Cloths, Carpets,
Leather and Rubber,

413 Arch St., Philadelphia, Pa.

Want a little more business? Try a card in
THE HUB.

Results are sure to follow. —●—

EBERLY & ORRIS,

Mechanicsburg, Pa.

Manufacturers of

**LIGHT and
HEAVY
WHEELS**

Wheel Stock and
Hard Wood Lumber.



BOOB'S DROP AXLE DOUBLE AND SINGLE
ELLIPTIC SPRING GEAR, with
Short Turn Fifth Wheel.



Adapted for Milk, Bakery and Grocery Wagons, all complete, with wheel and shaft ready for body, for \$24.00.

Send for catalogue, giving prices on a full line of Buggy, Bike and Business Wagon Gears, Wheels, Carriage and Wagon Hardware of every description.

WILLIAM W. BOOB, 450 E. MAIN STREET,
CENTRE HALL, PA., U. S. A.
Export Orders a Specialty.

J. H. STEPHAN & SON,

MANUFACTURERS OF

Hubs and Spokes

HIGH GRADE STOCK
A SPECIALTY.

HAMILTON, OHIO.

BALTIMORE HUB FACTORY.

We have now enlarged our factory with the latest improved WHEEL MACHINERY and, having a surplus stock, we are now in position that we will not be undersold. We are prepared to meet all competition.

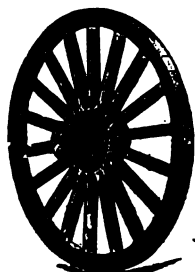
GUARANTEE.—All our X and XX Wheels will be covered by a very liberal guarantee for one year; should any XX wheels prove defective, will be replaced with new wheels, customer keeping old wheels for their trouble; any X grades proving defective will be repaired free of charge. Will make a SPECIALTY of good No. 2 and No. 1 wheels, that will give satisfaction. Rouse bands furnished on X and XX grades free of charge when desired.

JOHN STINSON, Proprietor,

326-332 N. Holliday St., BALTIMORE, MD.

WHEELS

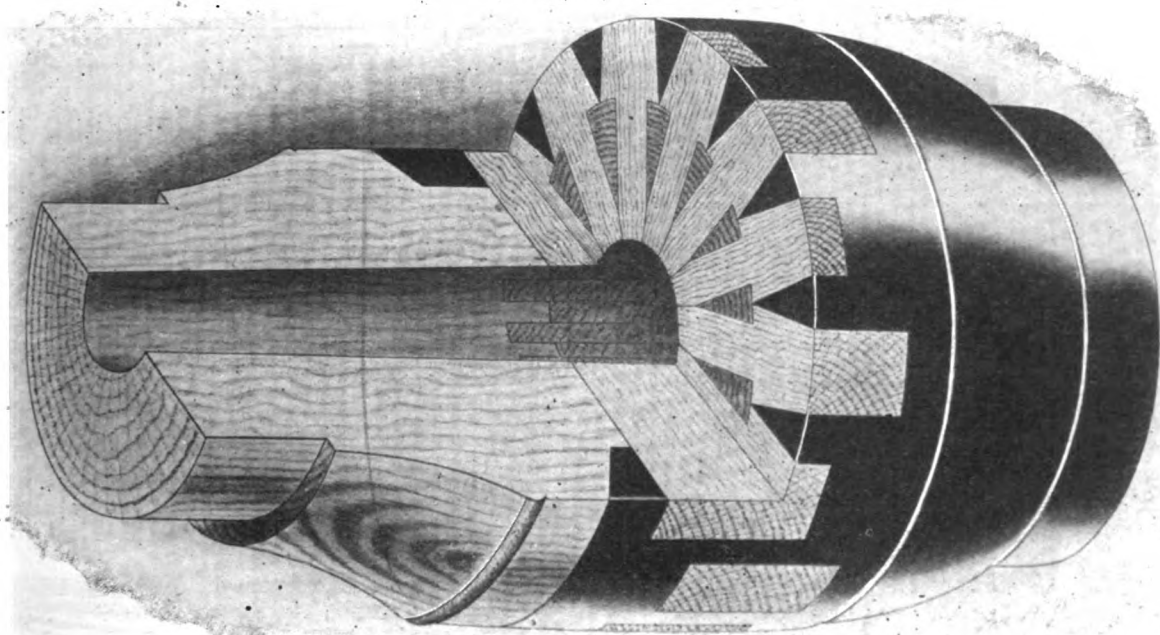
Warner, Sarven,
Plain, Star
and Compressed.



FINE CARRIAGE WHEELS.

WE MANUFACTURE

SCHAD, SARVEN, WARNER, SWEET'S, KENNEY, COMPRESSED
BAND AND WOOD HUB CARRIAGE WHEELS.

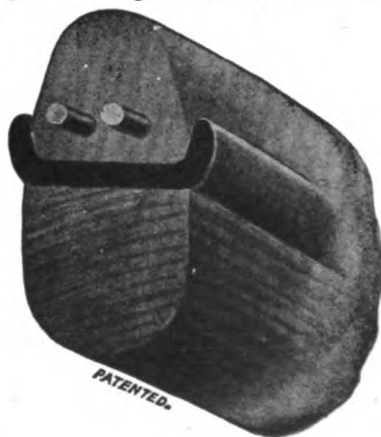


OUR LEADER IS

The SCHAD HUB.

It is handsome in appearance, the strongest Hub on the market, and
it is impossible for spokes to get loose in the hub.

We have one of
the most complete
plants in the United
States for putting on
steel tires.
We also apply Solid
Rubber and Pneumatic
Tires at our Factory,



and sell the wheels
complete. We use the
Kelly-Springfield solid
rubber tire and the
Clark Valveless Pneu-
matic tires, two of
the best rubber tires
made.

AVOCA WHEEL CO.,

ESTABLISHED 1890

AVOCA, N. Y., U. S. A.

AXLES For Every Kind of Vehicle.

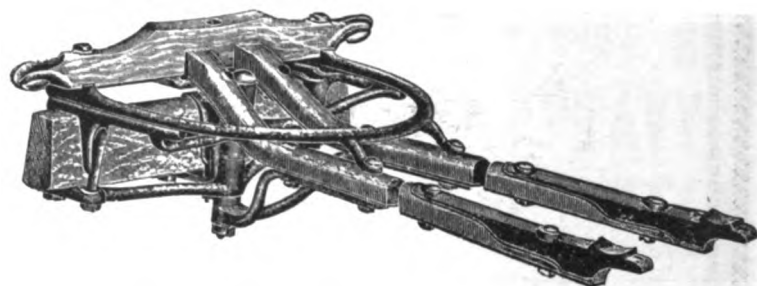
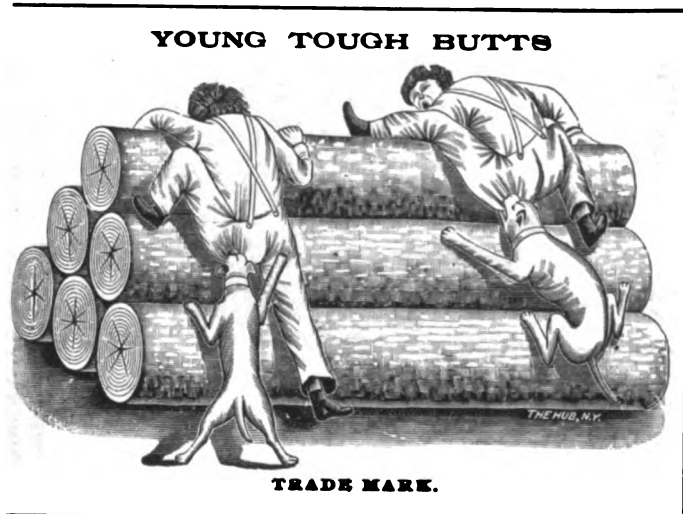
Write for Cuts and Prices.

"COMMON SENSE BALL BEARING,"

"COLLINGS COLLAR EXPRESS," ETC., ETC.

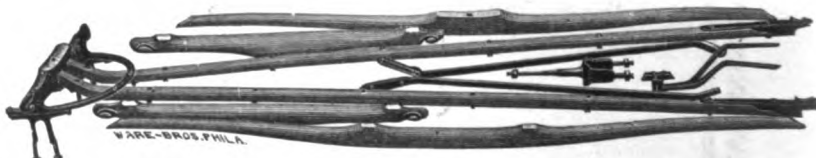
W. F. BLACK, 725 ELECTRIC BUILDING,
CLEVELAND, OHIO..

ANDREW KIMBLE, GEAR WOODS and Patent Bent Reach Malleable Wheel.



The Only BENT REACH REAR KING BOLT in the World.

Can be used with either Malleable or Wrought Wheels.



ALL STYLES OF GEAR WOODS
MADE TO ANY PATTERN.

Gear Woods Ironed with Derby, Brewster and Malleable Wheel. Single and Double Reach Phaeton. Straight Sill and Cut-Under Surreys.

WRITE FOR CATALOGUE AND PRICES.

ANDREW KIMBLE,
ZANESVILLE, OHIO.

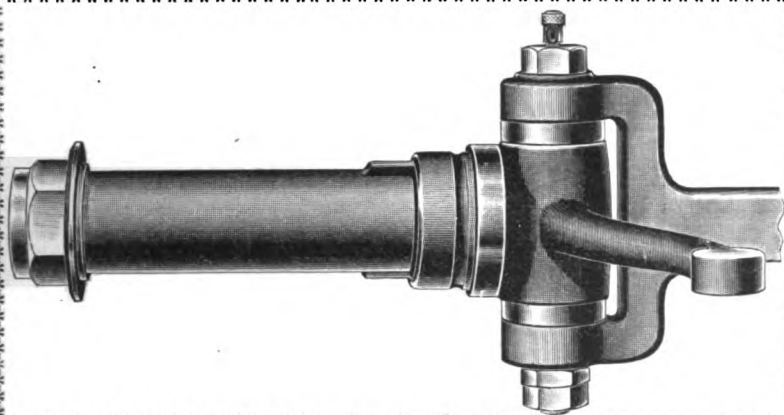
Hartford Axle Company.

Good Axles are the result of experience, careful attention to smallest details, and the constant desire to improve. The continual upbuilding of our reputation has been guided by these principles, and a trial of our work will convince you of the excellence of our product. We make all styles, including the Brewer.

- - - **Dunkirk, N. Y.**

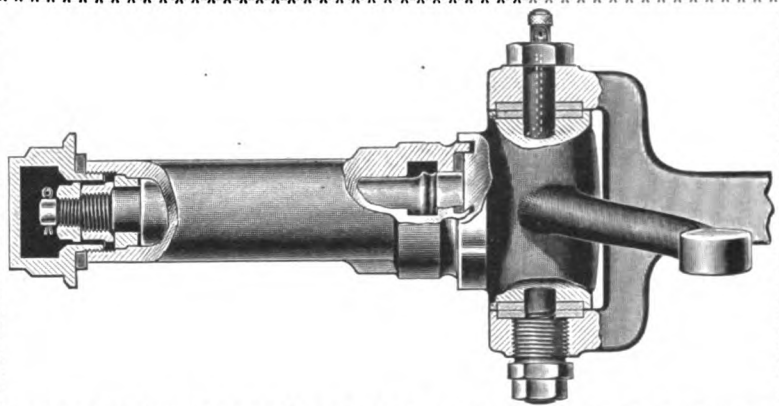
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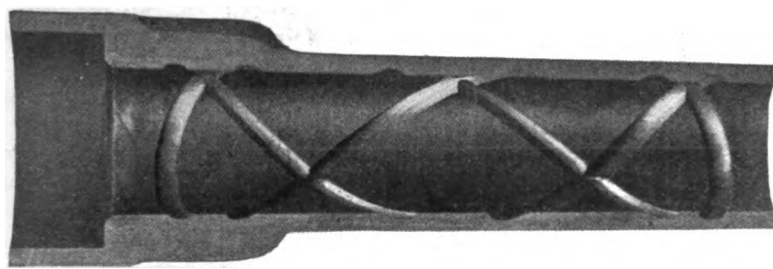


DALZELL PATENT
AXLE
FOR
AUTOMOBILES.

Dalzell Axle Co.
SOUTH EGREMONT,
MASS.



The ACME of SELF LUBRICATING AXLES.
THE OSGOOD PATENT BOX.



The best device for long distance use yet perfected.

Has been run six months with one oiling.

This device is in the box, not in the spindle of the axle.

No grooves or holes cut in spindle, thereby weakening same.

NO MORE BROKEN SPINDLES.

We are the sole licensee among axle manufacturers.

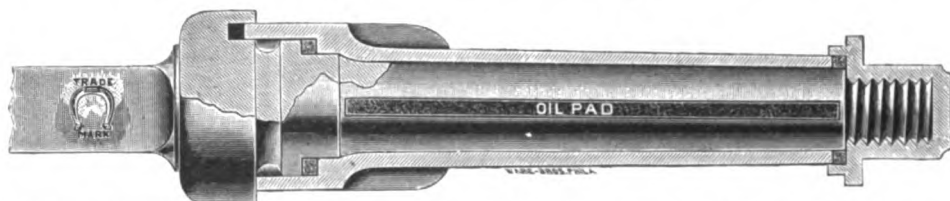
Prices quoted on Application.

THE SCRANTON AXLE WORKS,
Makers of Fine Vehicle Axles of every description,
SCRANTON, PA.

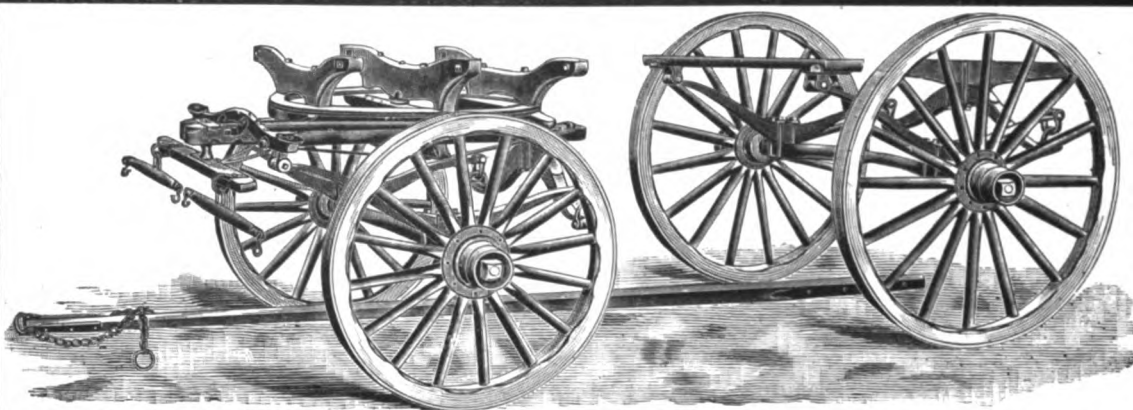
Please mention "The Hub" when you write.

Manufacturers of "Collinge Collar" and other styles of Axles for "Long Distance" use.

Also Manufacturers of the best "Concord Express Axles."



SPEARS AXLE CO., WHEELING, W. VA., U. S. A.



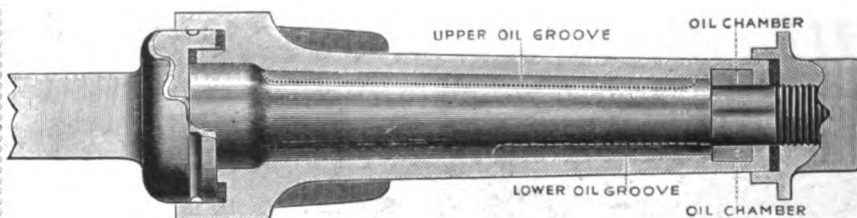
Complete Gears as shown above, ready to receive body, for light and heavy work, can be furnished promptly. In ordering give full specifications, or such description as will enable us to make up specifications. Dealers in wagon materials will quote prices on our gears.

**SELLE
GEARS**
THE SELLE
GEAR CO.

AKRON, O.

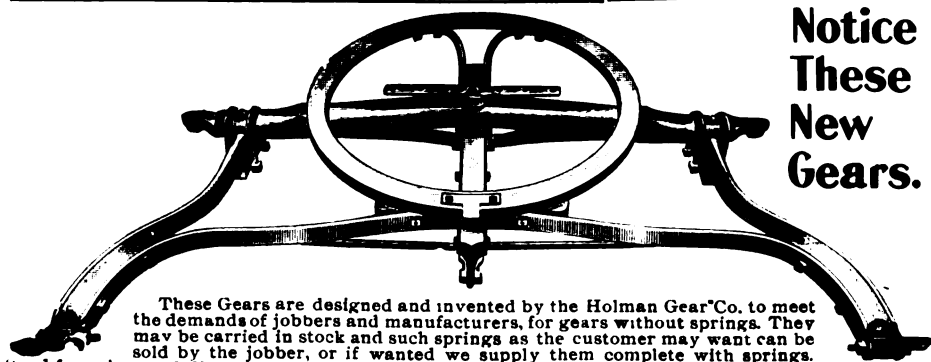
Anderson's "Long Winded" Axle.

**Guaranteed
to run 1,000
to 2,000
Miles with-
out re-oiling**

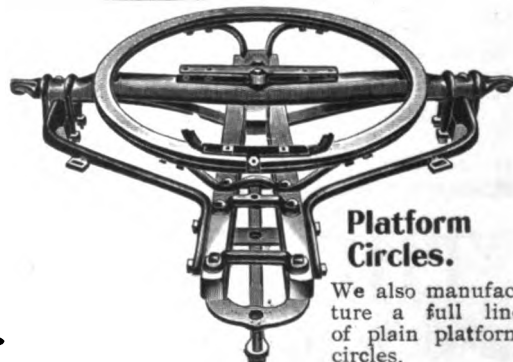


(One now being tested has run since March 20th, 1900, without re-oiling, and up to March 1st, 1901, had travelled, by actual measurement, 1556 Miles, and will run a month or two longer.)

**HESS SPRING AND AXLE COMPANY, Licensees,
CARTHAGE, OHIO.**



**Notice
These
New
Gears.**



**Platform
Circles.**

We also manufacture a full line of plain platform circles.

These Gears are designed and invented by the Holman Gear Co. to meet the demands of jobbers and manufacturers, for gears without springs. They may be carried in stock and such springs as the customer may want can be sold by the jobber, or if wanted we supply them complete with springs. Send for prices and discounts.

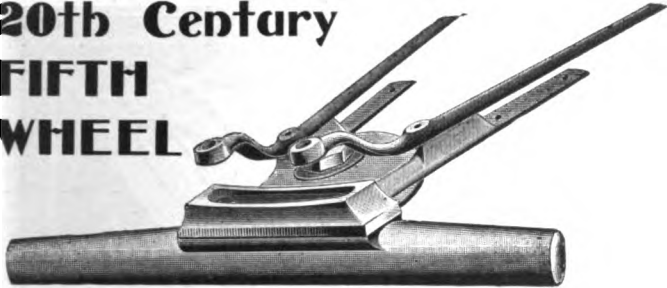
But understand we also sell Holman Gears, with or without Holman Springs, and we claim they have practical points of superiority to any others made. The Holman Gears and the Holman Springs are patented and cannot be obtained except from us, and all infringements will be prosecuted. Send for catalogue and price list.

DO YOU USE AXLES? We own the best and simplest ball-bearing axle made, and we want to sell the patent. But we have now a cheap, practical, self lubricating roller axle which we call our 10,000 mile axle, which provides all that can be required in the way of an anti-friction axle for vehicles, and adds only a dollar or two cost to put them on a job. Send for circular and illustration.

THE HOLMAN GEAR CO., VALPARAISO, IND.

Please mention "The Hub" when you write.

20th Century FIFTH WHEEL



Swaged or Round Pattern for Buggies or Surreys.
Patented September 4th, 1900.



Rear Axle Center, with Solid Forged Perch Connections for
Buggies or Surreys, Round or Swaged.

**Our Naked Axle Parts
are Winners.**

SAVE TWO WELDS AND
SAVE MONEY.

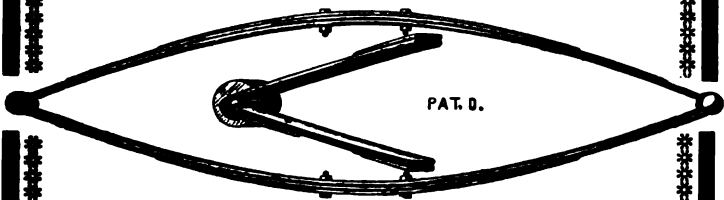
D. Wilcox Mfg. Co.,
Mechanicsburg, Pa.



Style No. 3. Round or Swaged.
WE GUARANTEE PROTECTION
20TH CENTURY FIFTH WHEELS.

At the Recent Chicago Show

nearly all exhibitors used the **MORRILL SPRING**
on their "Leaders," and a careful canvass of the
entire field, among both manufacturers and users,
convinces us beyond any doubt that the



Osgood Morrill Spring

is an unqualified success. We made our first
springs of this pattern under the personal direc-
tion and approval of the inventor, and our product

IS MADE CORRECTLY.

Most of those who did not exhibit it placed their
orders with us for that spring before leaving the
city.

Write for particulars.

Tuthill Spring Co.,

315 CLINTON STREET, CHICAGO, ILL.

C. Cowles & Co.,

New Haven, Conn., U. S. A.

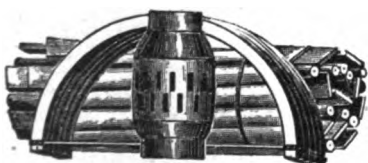
Ask us to quote on Carriage and Coach
Lamps, Axle and Saddle Clips, Oval and
Flat Corner Irons, "Excelsior" Curtain
Fasteners,

**Milled Shackle Bolts,
Cloth and Metal Buttons,
Door Handles, Shaft Tips.**

WE ARE HEADQUARTERS FOR ABOVE.

LARGEST VARIETY OF LAMPS FOR

1901.



J. B. KOLLER & CO.,
Manufacturers of **Spokes, Rims, Hubs and Rough Wagon Poles,**
MECHANICSBURG, Cumberland County,
PENNSYLVANIA.

Please mention "The Hub" when you write.


 An illustration of a Mather 1,000 Mile Axle, which is a large, oval-shaped metal component with a central hole. The text "MATHER" is at the top, "1000 MILE AXLE" is at the bottom, and "1000" is on the left side.

MATHER
1000
MILE AXLE


 An illustration of a Cleveland No. 6 1/2 Concord Express Axle, which is a large, oval-shaped metal component with a central hole. The text "CLEVELAND" is at the top, "No. 6 1/2 CONCORD EXPRESS AXLE" is at the bottom, and "No. 6 1/2" is on the left side.

CLEVELAND
No. 6 1/2 CONCORD
EXPRESS AXLE


 An illustration of a Standard Roller Bearing Axle, which is a large, oval-shaped metal component with a central hole. The text "STANDARD" is at the top, "ROLLER BEARING AXLE" is at the bottom, and "STANDARD" is on the left side.

STANDARD
ROLLER BEARING
AXLE

THE KEYS TO Prosperity

FOR the styles of vehicles for which they are intended the three axles sold by us are the best on the market.

The Mather 1,000 Mile axle is the best and most favorably known for buggies and other driving wagons.

More of them have been sold than of all the other long distance axles combined.

Cleveland No. 6 1/2 Concord Express Axles are stronger and outwear any other axle made, making them particularly desirable for heavy trucks and drays.

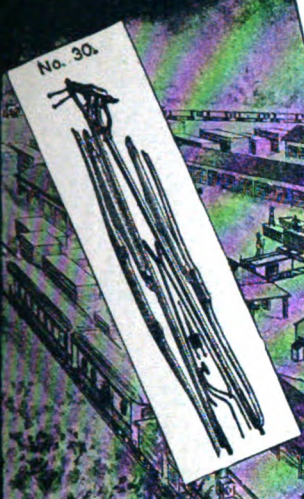
Standard Roller Bearing Axles are used on 1,000 delivery wagons belonging to the Standard Oil Company. Everyone knows that the Standard Oil Company uses the best.

The price of these three styles of axles is not the least attractive feature about them.


*Cleveland Axle Mfg.
Co., Canton, Ohio.*

CHARLES AUSTIN BATES N.Y.


THE OLD RELIABLE




No. 30.



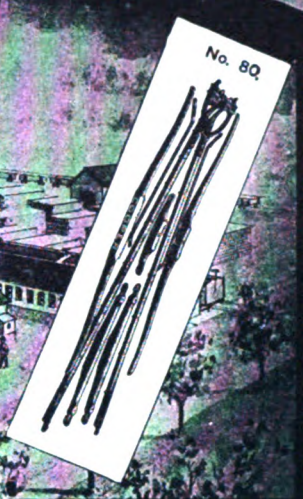
No. 40.



No. 60.




No. 70.



No. 80.

OUR FACILITIES enable us to furnish our IRONED UP SETS **BETTER** and **AT LOWER PRICES** than you can produce them, no matter how many or how few you make.

BETTER INVESTIGATE THIS.

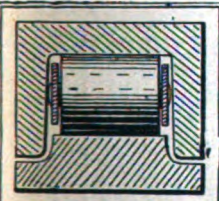


THE J.A. AND D.P. COOPER

STRUTHERS, OHIO, U.S.A.

RECOGNIZED LEADERS and the only PRACTICAL CAR-RIAGE MAKERS in the GEAR WOOD TRADE.

Send for CATALOGUE E


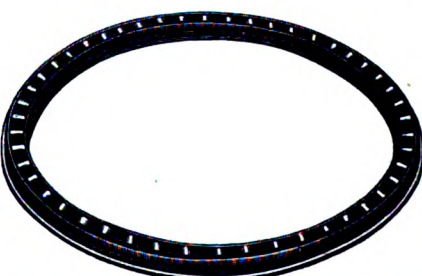



THE NIELSON

Roller-Bearing Fifth Wheel.

HAS NO EQUAL.

DON'T BE FOOLED.

WHY THE NIELSON IS THE BEST.

It is the product of a practical wagon builder, who has made a careful study of his trade and the necessity of developing something new in the way of a fifth wheel that would overcome the friction caused by the old circle in use on all kinds of platform vehicles. The present fifth wheel is the outcome of years of experiment, and contains all the good features lacking on other fifth wheels. The rollers, while an important part of the Nielson patent, without the other features, would be as worthless as some others that are offered as "the best."

Don't let anybody tell you that So and So's Roller Bearing Fifth Wheel is just as good as the Nielson.

Roller-bearings, like ball bearings, to prove of value must be properly housed. This is one of the greatest practical points on the Nielson, as it is constructed so that neither dust nor the elements to which fifth wheels are subject can affect the rollers.

As the rollers overcome all friction, the use of oil, grease or other lubricants is obviated, and thus when once the Nielson is attached to a vehicle, the user need give this part of the vehicle no further thought, as it will outlast any vehicle. It always works easy, and never gets out of order. No worry about broken shafts or poles, as the Nielson turns easily under the heaviest load. It is a godsend to dray horses, as well as to the users of vehicles for mercantile purposes, as the Nielson not only saves the horses, but prolongs the life of the vehicle.

YOU WANT THE BEST.

GET THE NIELSON.

Ask your dealer or write for full particulars to

CHRISTEN NIELSON, 745 Third Avenue, BROOKLYN, N. Y.

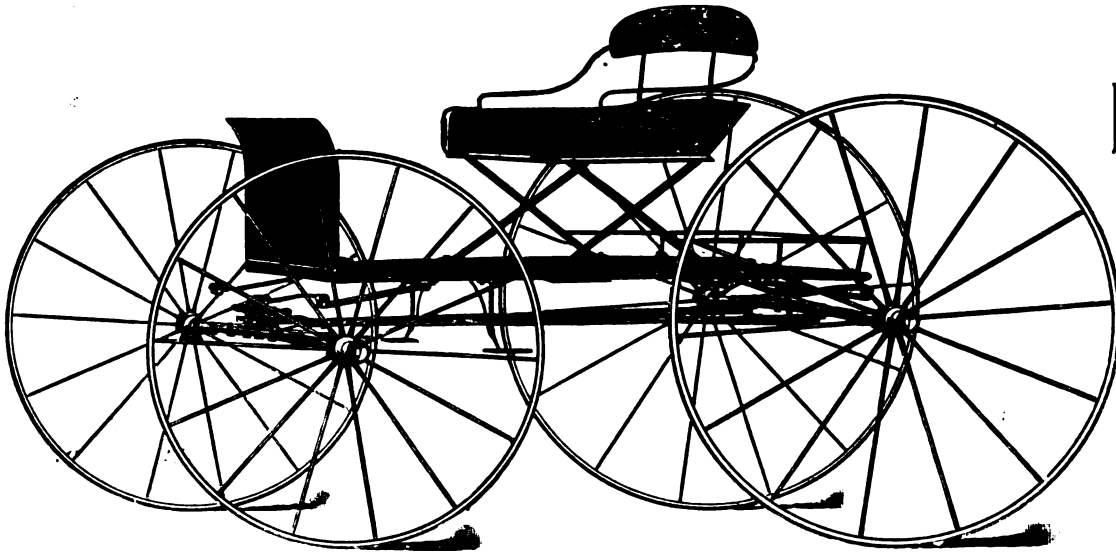
Please mention "The Hub" when you write.

The Best Buckboard on Earth!!

Is made by using THE MULHOLLAND SPRINGS.
The Popular Vehicle from Maine to California.

We can furnish you the complete job in the white, and make a specialty of furnishing the slat bottom part with springs attached. Or sell the springs alone to those who desire to manufacture the wagon themselves.

WRITE FOR OUR CATALOG AND PRICES.



No. 44. MULHOLLAND BUCKBOARD WAGON.

MULHOLLAND
SPRING &
GEAR CO.
DUNKIRK,
N. Y.

ARE THEY COMING YOUR WAY?



IF NOT,
WHOSE
FAULT?

WE ARE
DOING ALL
WE CAN.



SEND FOR CATALOGUE
AND PRICES.

SIDNEY POLE & SHAFT CO

FACTORIES: { SIDNEY, OHIO,
ST. LOUIS, MO.

Please mention "The Hub" when you write.

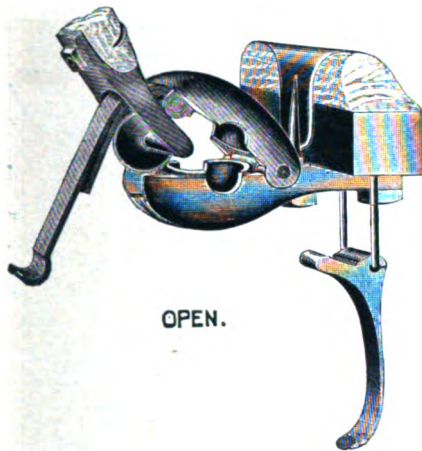
CONSTRUCTION AND MATERIAL ARE POINTS WE ARE PROUD OF IN THE MULHOLLAND SHAFT COUPLER.

CONSTRUCTION.

THE Mulholland Coupler is Quick Shifting, Ball-Bearing, Leather Bushed. The Bushings are cemented into jaws and lined with Graphite. It has a non-breakable spring of uniform width and thickness, and a dirt proof flange and interlocking device. It takes up its own wear.

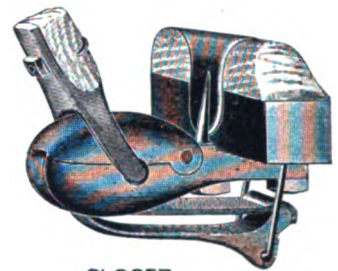
MATERIAL USED—ALL STEEL.

THE Shaft and Pole Ends are forged from Bar Steel. The Springs are of Crucible Steel, while the Jaws, Levers, etc., are of Bicycle Steel. The STRONGEST, and it may be well to state the most EXPENSIVE materials used in Shaft Coupler construction.



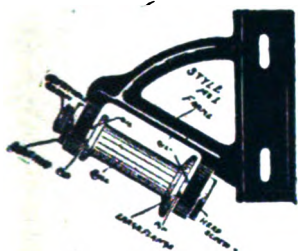
OPEN.

THIS IS WHAT MAKES
THE MULHOLLAND the
Most Perfect Shaft Coupler
on the market. : : : : :
A sample pair will convince
you of its merits. : : : : :



CLOSED.

Mulholland Spring Co., Dunkirk, N. Y.



No. 1 Pattern.
Fits any straight bottom
vehicle.

ROLLER CHAFE IRONS

BUY THE BEST.

Ganon's Anti-Friction Wheel Guard

Furnish Guards for all Kinds of Vehicles.

These Rolls Never Refuse to Turn. No Springs and No Rattle

For prices and Catalogue, address

GANON & TRON MFG. CO., Indianapolis, Ind.

SLEIGH COUPLINGS AND CLIPS.

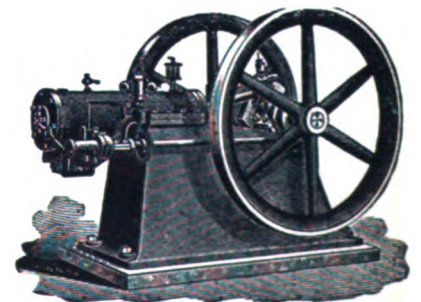
SHAFT COUPLINGS,
KING BOLTS,
AXLE AND SADDLE CLIPS



BOLTS OF EVERY DESCRIPTION.

WRITE FOR OUR 1898 CATALOGUE.

COLUMBUS BOLT WORKS,
COLUMBUS, Ohio.



GAS and GASOLINE ENGINES.
OBSERVE ITS SIMPLICITY.

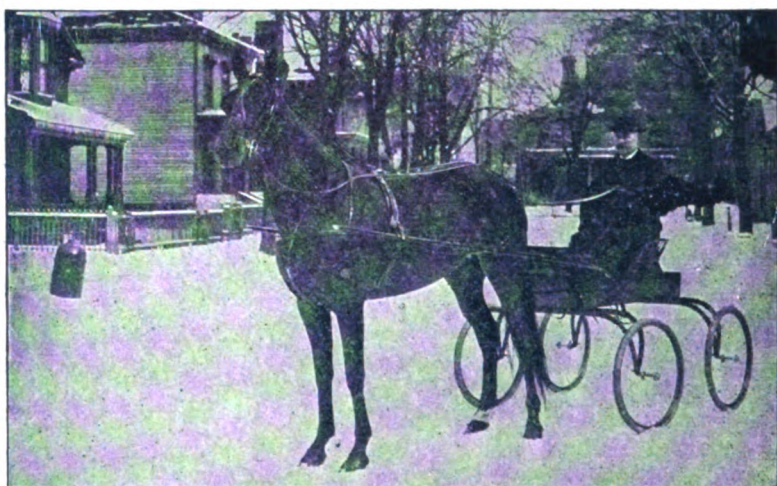
Everything is in sight. No mechanism concealed on back side or within bed. The cheapest class of power. Is steady in speed and adapted to any class of work for which steam power is used. Send for Catalogue "D."

COLUMBUS MACHINE CO., COLUMBUS, O.

Please mention "The Hub" when you write.

• THE • BAKER BALL BEARING AXLES

THE MOST NEARLY PERFECT ANTI-FRICTION AXLES IN THE WORLD.



SPEED WAGON OF A. E. PERREN, BUFFALO, N. Y.

OFFICE OF
A. E. PERREN,
CARRIAGE BUILDER.

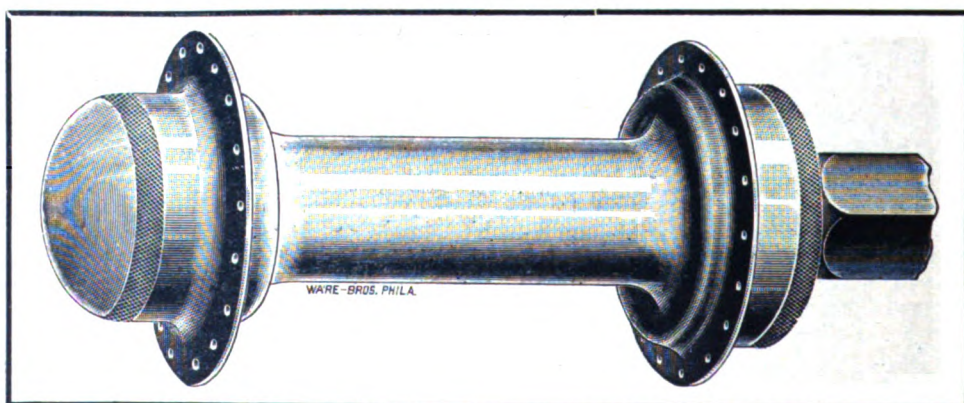
UNITED STATES BALL BEARING CO., NEW YORK CITY.

GENTLEMEN :

I was the first manufacturer in this or any other country to make the low wheel, ball bearing, pneumatic tire wagon. Naturally I was anxious to have a perfect wagon, and with that end in view I tried and tested every ball bearing axle that had any reputation at all, but I find that *yours is the best* in my judgment, as it is easy running, easy of adjustment and easy to clean, and water does not get in when washing the wagon. This axle was on the sixty-five pound wagon to which I gave my horse "True Chimes" a half mile road wagon record at the Empire City track, New York City. He went the half mile in 1:02 $\frac{3}{4}$, the last quarter in 31 seconds. As the axle forms such an important part of a wagon, I consider myself fortunate in being able to buy such a superior one as you turn out.

Yours truly,

A. E. PERREN.



UNITED STATES BALL BEARING CO.

Townsend Building, Broadway and 25th Street,
NEW YORK CITY.

C.H.A.T.

Helps Secure Situations.

**Carriage, Harness and
Accessory Traveling
Salesmen's Association**

OF THE UNITED STATES.

**All Commercial Travelers in Above Lines Eligible.
No Others. Pays Death Benefits.**

Membership Fee, - - \$3.00
Annual Dues, - - - - 1.00

Employers of Traveling Men eligible to join as associate members on payment of \$5.00, and are exempt from all further dues.

Manufacturers of carriages, harness or goods that enter into their construction, jobbers of same, can secure good, reliable and efficient salesmen through our Association, as the members of this Association have the best facilities for knowing all about men who are seeking situations, and none will be recommended unless they are first class and worthy of support.

Salesmen in need of a situation, or manufacturers in need of a salesman, address for further information,

P. D. RANDALL, Secretary.

Board of Trade, Springfield, Mass.

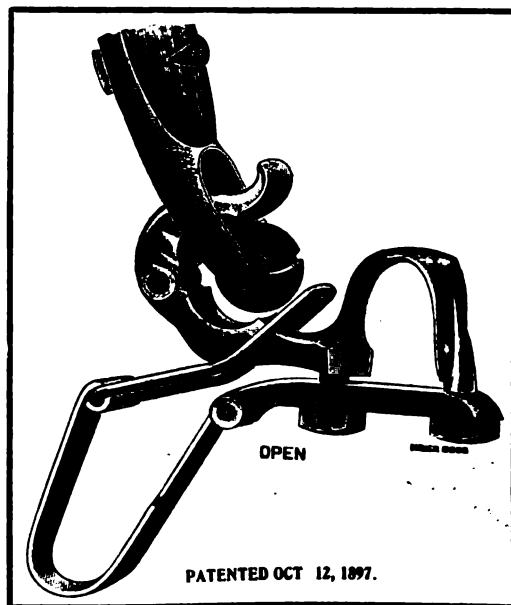
Eccles Adjustable Shaft Eye.

PATENTED AUGUST 24th, 1900.



Ball Bearing Shaft Coupling.

SEND FOR DESCRIPTIVE CIRCULARS AND PRICES.



PATENTED OCT 12, 1897.

ALSO GET OUR CATALOG SHOWING FULL LINE OF

Carriage Forgings.

RICHARD ECCLES,

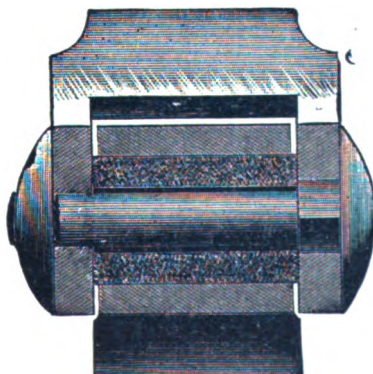
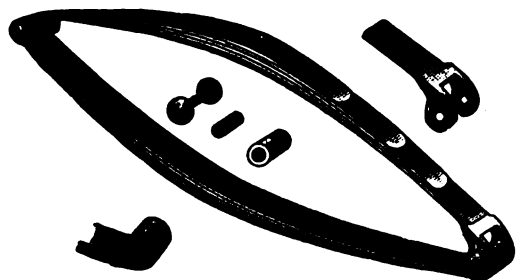
AUBURN, N. Y.

Elliptic and Coach Platform Springs

WITH RUBBER OPEN-HEADS.

LARGE SIZE.—Designed for Broughams, Landaus and Coaches.

SMALL SIZE.—Designed for Buggies and Light Carriages.



The Rubber Open-Head

SPRINGS

Work Freely Without Friction.

No Binding or Squeaking in
the Heads or Eyes.

Springs of Every Style and Pattern to order,

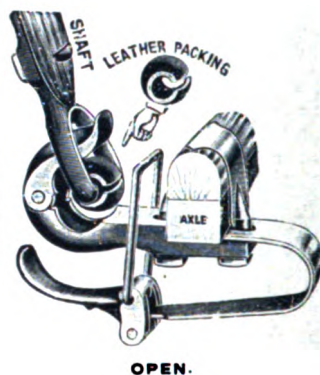
**ALSO CURTAIN ROLLERS and CONCEALED HINGES.
Exclusively First-Class Work.—The Best that Can be Made.**

SPRING PERCH CO.,

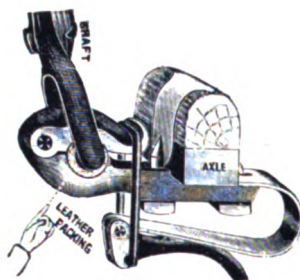
BRIDGEPORT, CONN.

Please mention "The Hub" when you write.

THE BRADLEY SHAFT COUPLING



OPEN.



CLOSED.

THERE is no question about it.

The Bradley Shaft Coupling will help sell any vehicle to which it

is attached. The fact that it is made of nothing but Steel and will outwear a vehicle cannot be disputed. It is as noiseless as the Sphinx, Ball Bearing, Self Lubricating, and with it shafts and pole can be changed in less than 10 seconds without tools. One hand or one foot will open or close this Coupling. It is as safe as Government Bonds. Vehicle manufacturers will furnish it if dealers insist. Why not insist and thus get the best.

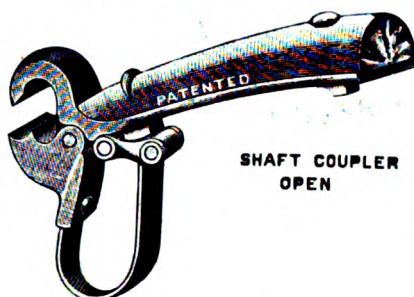


C. C. BRADLEY & SON,
SYRACUSE N. Y.

THE GREATEST SUCCESS OF THE SEASON
IS THE

STANDARD COUPLER

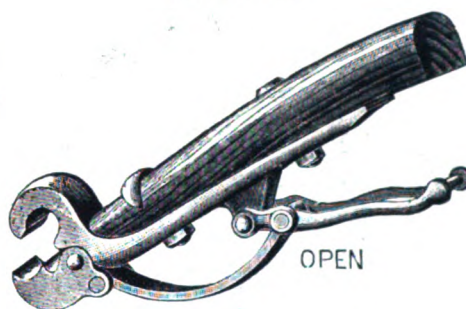
REGULAR MODEL



SHAFT COUPLER
OPEN

EVERY PAIR WARRANTED

1901 MODEL



OPEN

OPERATED INSTANTLY

It takes the regular shaft shackle—It interchanges—Takes any size bolt—Cannot become detached while driving—No bushings—Takes up its own wear because the hole closes as the bolt wears—It fits perfectly and always remains so on any size bolt—No side rattle—Standard couplings are also furnished in regular shaft iron lengths—30 inch—and with holes punched for bolting to shafts.

TRY A SAMPLE PAIR

AND YOU WILL NEVER
USE ANY OTHER

OUR NEW SPRING CUSHION

Furnished exactly as shown
in illustration, all ready for
attaching to wood frame.



Is cheaper and applied with
less labor than any similar
device.

Order a sample lot and be convinced

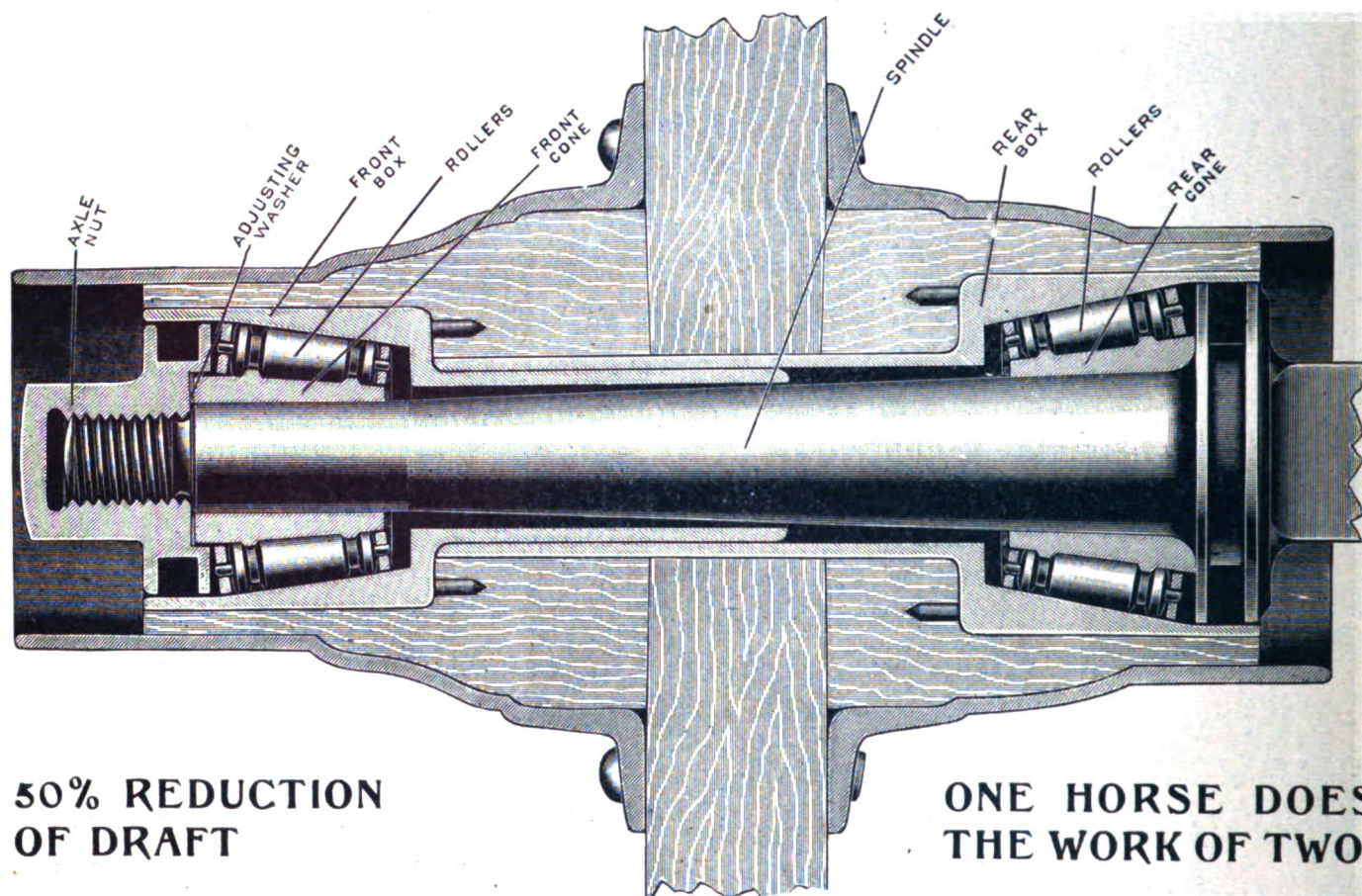
METAL STAMPING CO.

HEADQUARTERS FOR CARRIAGE TRIMMINGS AND HARDWARE

468-472 WEST BROADWAY

NEW YORK

TIMKEN ROLLER BEARING AXLE



50% REDUCTION
OF DRAFT

ONE HORSE DOES
THE WORK OF TWO.

Patents No. 606,635, June 29th, 1898. No. 606,636, June 28th, 1898.

Knowing that many improperly constructed and untried anti-friction axles have been offered the trade with disastrous results, we say to you that our axle is mechanically perfect and a tried success in every sense of the word, and therefore offer you the following very broad trial warranty on sample axles:

IF, AFTER SIX MONTHS FROM DATE OF SHIPMENT, YOU ARE NOT SATISFIED WITH THE WORKING OF THE TIMKEN ROLLER BEARING AXLES, YOU MAY FREIGHT THEM BACK TO US AND WE WILL REFUND AMOUNT YOU PAID US FOR THEM.

Address All Communications to

TIMKEN ROLLER BEARING AXLE CO.

HENRY TIMKEN, President,

STOCK OF AXLES ALSO CARRIED AT OUR
NEW YORK OFFICE, No. 1769 BROADWAY.

2d and Branch Streets, ST. LOUIS, MO.

BRANCH OFFICES:

BOSTON, 29 Beverly Street.

BROOKLYN, 49 Boerum Place.

PHILADELPHIA, Fulton and Walker Co. (Wagon Building).

Please mention "The Hub" when you write.



WE put the **Quality** in our Bailey Hangers; the **Price** is right; our **Reputation** for making high grade, honest rolled steel hardware is well known.

We roll these Bailey Hangers from one solid piece of steel. They are strong, shapely, durable and the kind that it pays to buy.

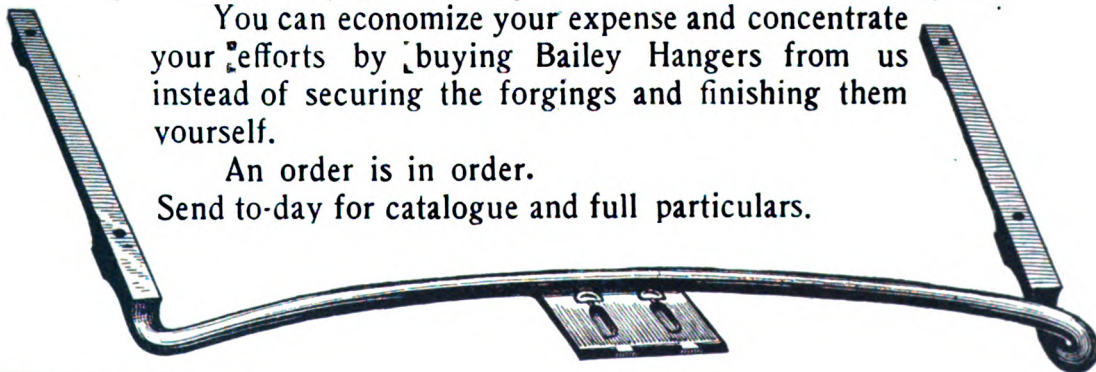
In addition to the size for Buggies, we make the Bailey Hangers in a much heavier pattern suitable for use on Surreys and Spring Wagons. These are in two patterns—one for bolting to spring and the other for clipping to spring.

They are bent to shape, all complete, and ready to go on the job.

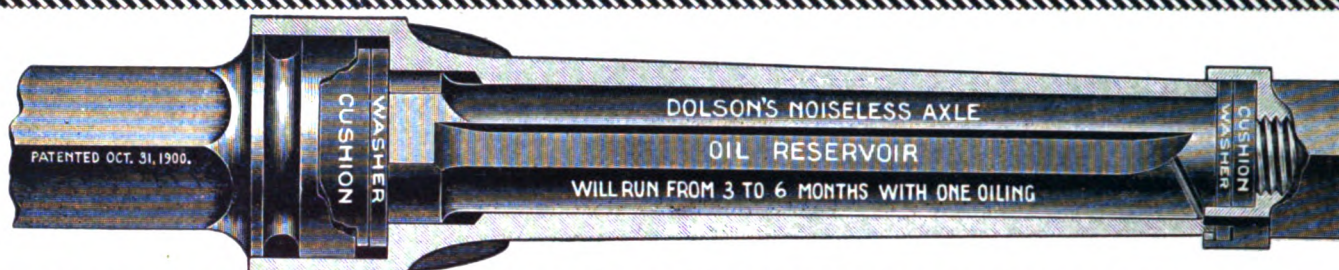
You can economize your expense and concentrate your efforts by buying Bailey Hangers from us instead of securing the forgings and finishing them yourself.

An order is in order.

Send to-day for catalogue and full particulars.



THE CLEVELAND HARDWARE CO., CLEVELAND, OHIO.



Dolson's Noiseless Axle

THE GREATEST IMPROVEMENT ATTAINED IN AN AXLE

Is absolutely noiseless, even though the washers have become badly worn. This Axle is constructed with a cushion in the collar and the nut. These cushions relieve the wheels from sudden jars. The fibre washers rest against the cushions and are so constructed that they do not revolve. The fibre washer which is contained in the nut when in place rests against the shoulder of the arm and the point of the box. The spiral groove at the point of the arm prevents the exit of oil. The peculiar shaped groove on the top of the Axle collects the oil from the box as the wheel revolves, and the "V" opening allows it to escape. This Axle is not complicated in its construction—simply put on the nut and screw it up. It is neat and tasty in appearance, will run from 3 to 6 months with one oiling and is the only Axle specially adapted to rubber tire vehicles, as it will not rattle or jar under any circumstances.

FOR FURTHER PARTICULARS, AND PRICES, ADDRESS,

Liggett Spring and Axle Company,
PITTSBURG, PA.

THE St. Paul Road.

(Chicago, Milwaukee & St. Paul Ry.)

ELECTRIC-LIGHTED
TRAINS

DAILY BETWEEN

Chicago
Des Moines
Sioux City
Omaha

All Coupon Ticket Agents sell tickets via
Chicago, Milwaukee & St. Paul Ry.

F. A. MILLER, General Passenger Agent,
CHICAGO, ILL.

THE "TRACER" TELLS.

THE
"TRACER"
TELLS

Isn't it worth your while to learn what other Wholesale merchants know about Retailers who seek credit from you? The "Tracer" tells.

THE
"TRACER"
TELLS

Isn't it worth your while to learn from other Wholesale merchants what record your would-be customer has made with them? The "Tracer" tells.

THE
"TRACER"
TELLS

Isn't it worth your while to be able to ask several thousand merchants everywhere what they know about a man you want to know about? The "Tracer" tells.

THE
"TRACER"
TELLS

Isn't it worth while to learn that one of your customers, who is prompt in New York, Philadelphia or St. Louis, is getting very slow pay in Chicago and Boston? The "Tracer" tells.

THE
"TRACER"
TELLS

Isn't it worth while to learn your customers' inside business history, not from outside guesses, but from inside records; the actual experience of those who have dealt with them? To learn those things that determine character and business ability as well as financial strength? The things that make you trust or distrust a man? The things that come up in actual business dealings, but which an outsider cannot know? The "Tracer" tells.

THE
"TRACER"
TELLS

Is he honest? Is he tricky? Is he careful, prudent, shrewd? Has he the qualities of success? Does he cancel orders unjustly? Does he make false claims for deductions? Is his record good or bad? Are his methods good or bad? The "Tracer" tells.

THE
"TRACER"
TELLS

and it is the only thing that tells. Every business man leaves a record, widely scattered in the ledgers and in the minds of merchants far apart. That record, if gathered, is the best proof of what a man actually is, in his business relations. The "Tracer" gathers these scattered leaves and makes the record complete. The "Tracer" goes to thousands of Wholesale merchants everywhere. From them come a dozen detached bits of experience, concerning one man; together they show his whole business past, and his present condition. Has he ever bought? The "Tracer" tells. Is he getting slow? The "Tracer" tells. Is it time for caution? The "Tracer" tells.

THE
"TRACER"
TELLS

this history to us in fragments. We tell it complete to all who supply the fragments. They supply a few facts; in return they get a complete history. In addition to our unrivaled "TRACER" reports, this Agency gives all the benefits that any other Mercantile Agency can possibly furnish, including a Reference Book of Credits, semi-annually, January and July issues. Don't subscribe to any Agency until after you have first examined into this new and improved system. For terms, write—

NATIONAL MERCANTILE AGENCY,

SUCCESSORS TO

KALY'S "BLUE BOOK" AND THE BANKERS' COMMERCIAL LEAGUE
NEW YORK CITY.

TRANSFERS.....

are now interesting every carriage painter and wagon builder in the country, and every reader of this article will be glad to know that our new catalogue J, fresh from the press, is now ready for mailing, and will be sent to anyone free for the asking. We have combined in this catalogue some of our leading designs in catalogues F and H, and have added many new designs such as the trade demands. For the past two years we have been carefully studying the wants of carriage painters in this line, and we have to-day one of the most complete catalogues of designs for this purpose in the market. Every design we list is a perfect imitation of hand work, which gives the small repair men an opportunity to successfully compete with large manufacturers in the matter of finish. If you have a butcher wagon or laundry wagon to decorate, we can furnish you with appropriate ornaments for this purpose, and our catalogue fully describes this feature.

Our name plate feature is more popular than ever, and thousands of concerns are using them where they formerly used metal name plates or stenciled their name on in a very crude manner.

Orders for special designs, no matter for what purpose you desire to use them, can be executed in from two to three weeks' time, and at the most reasonable prices.



The MEYERCORD CO., Inc.

American Manufacturers

Guaranteed Decalcomania Transfers,

OFFICE :

Chamber of Commerce Building,
CHICAGO, ILL.



FACTORY :

CHICAGO, ILL.

The McGOVERN COLD TIRE SETTING MACHINE

HAND AND POWER MACHINES

TO SUPPLY THE DEMANDS OF THE
CARRIAGE AND WHEEL TRADE, AND ALSO THE BLACK-
SMITH AND GENERAL REPAIRER.

A power machine with an automatic attachment, and where the operator has absolute control of the machine; can stop or start it instantly at any point in its operation.

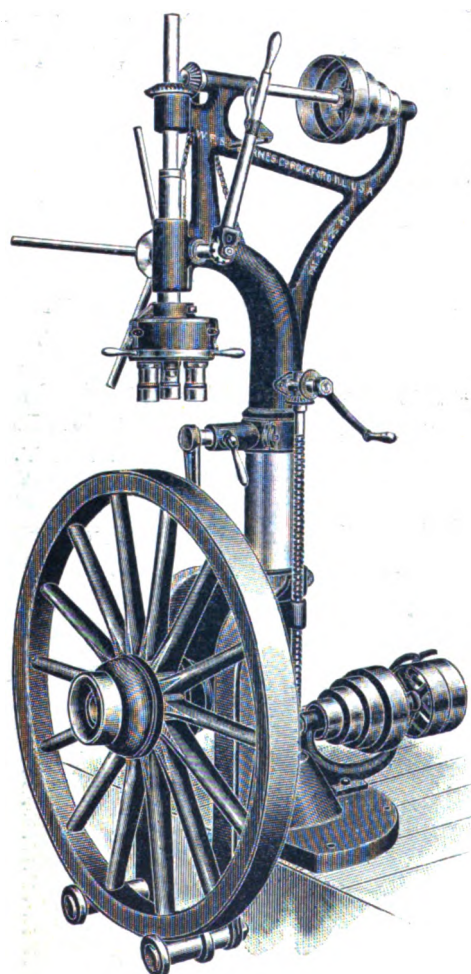
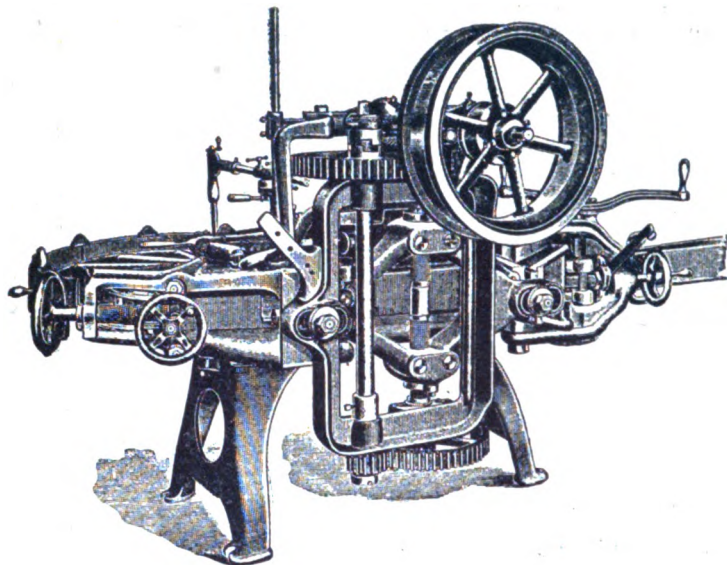
Simple in construction. Powerful in operation. Reasonable in price. Does its work thoroughly, accurately and rapidly, giving proper and uniform dish to wheels.

THE NEW MODEL McGOVERN COLD TIRE SETTING MACHINE

with its increased capacity, simplicity and strength, all three points being more than tripled in this new machine, we guarantee to set Tires ranging from $\frac{3}{4}$ inch to $2\frac{1}{2}$ inch \times $\frac{3}{4}$ inch. Our daily capacity from 800 to 1,000 wheels.

We shall be at the Pan American Exposition in Buffalo. Our machine will be in operation at the factory of the Buffalo Spring & Gear Co., three minutes walk from the grounds.

**The Tire Setting Machine Co.,
LIME ROCK, CONN.**



A New Tire Drill

**Most rapid
working tool
on the market
for this class
of work.**

Capacity:

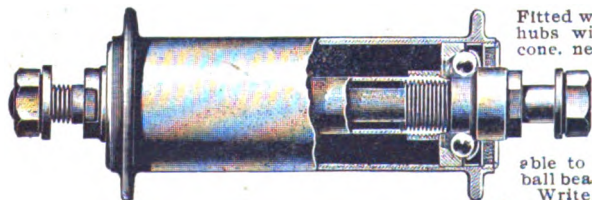
Any wheel up to 56 in.
diam.
Any width of tire up
to 6 in. wide.
Any hub up to 10 in.
diam.

**Better get
some details
of this Drill.**

Send for Catalogue.

W. F. & JNO. BARNES CO., Established 1872.
558 Ruby Street, - - ROCKFORD, ILL.

WESTON WHEELS.



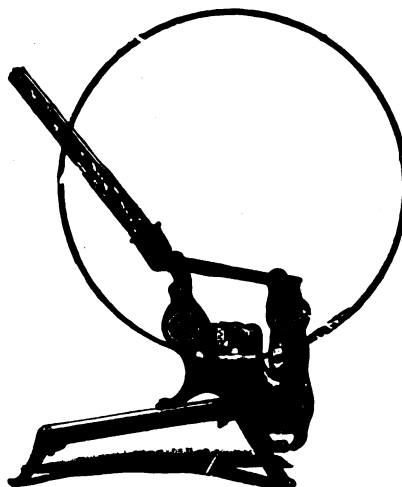
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Fitted with Champion hubs with two-point cone, new cone locking device and bolt pattern knock-out axle give the best results obtainable to the users of ball bearing vehicles. Write us fully regarding your requirements. Brown & Decker Streets, SYRACUSE, N. Y.

THE IDEAL TIRE UPSETTER.

The advantages of the Ideal are:

The tire cannot kink.
One man can operate it.
One movement does the work.
It will shrink light Buggy tire.
It will shrink Heavy Wagon tire.
It will shrink Truck tire.
It will shrink perfectly all kinds and thicknesses of tire.
It is the easiest handled.
It is the most durable.
It is the latest and best.



Send for Circular and Price.

Manufactured only by

WEYBURN & BRIGGS CO., 718 Main St., Rockford, Ill., U. S. A.



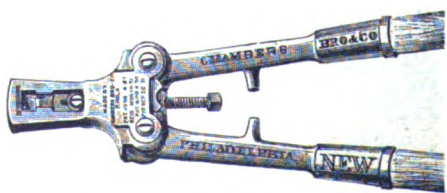
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It Welds "Steel Tires, Axles" and Springs as Easily as Iron.

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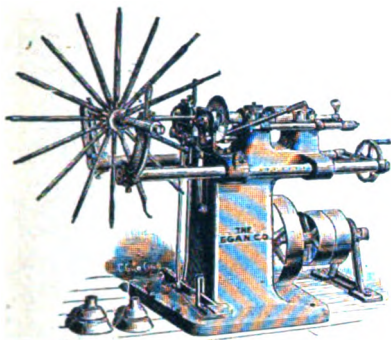
**CORTLAND WELDING COMPOUND CO.,
CORTLAND, N. Y.**



BOLT AND RIVET CLIPPERS

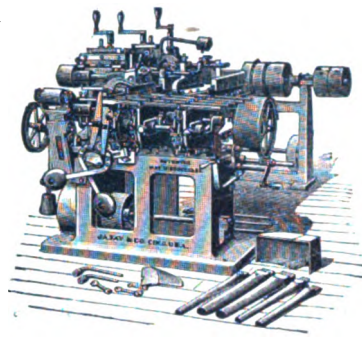
Chambers Brothers Co.,
52d Street, below Lancaster
Avenue,
Philadelphia, Pa.

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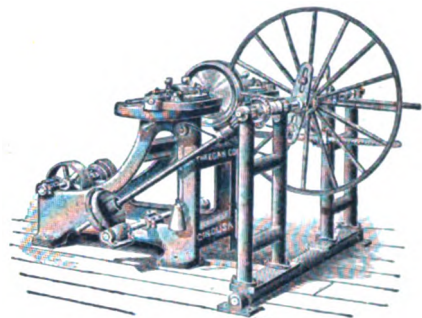
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"SINGLE MACHINES."



AUTOMATIC SPOKE-THROATING, TENONING AND MITERING MACHINE.

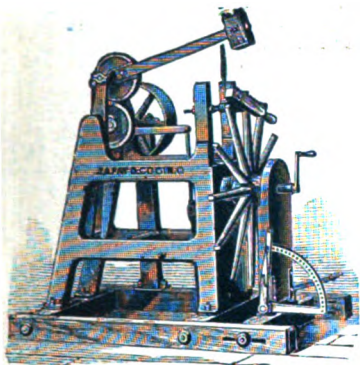
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NEW IMPROVED WHEEL RIM SANDER.

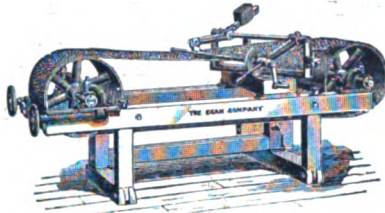
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FOR EVERY PURPOSE. SEND FOR CATALOGUE AND INFORMATION.



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"GRAND PRIX."

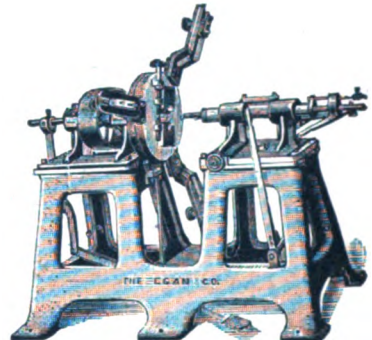


No. 2. SINGLE SAND BELT.

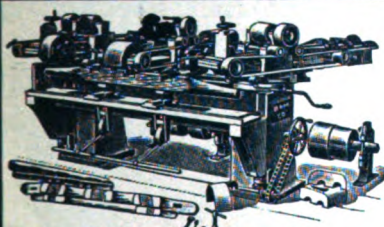
PARIS, 1900.

J. A. FAY & EGAN CO.

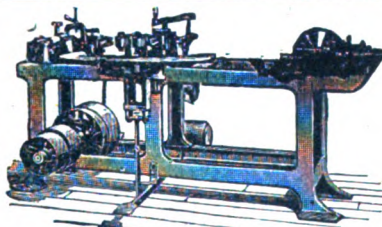
421-441 W. Front Street, CINCINNATI, OHIO.



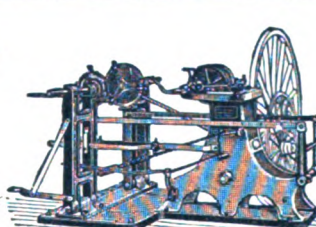
No. 1. PATENT WHEEL BOXING MACHINE.



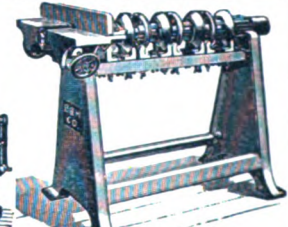
Improved Automatic Axle Gaining Machine.



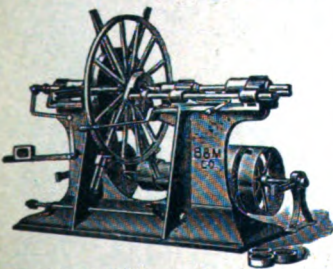
Felly Cut-Off, Boring & Doweling Machine.



No. 2 Wheel Polisher.

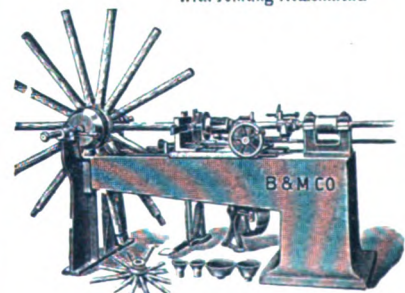


Improved Gear Rounding Machine, With Jointing Attachment.

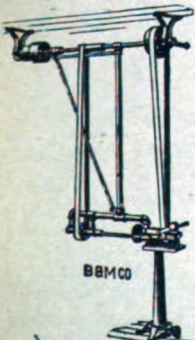


IMPROVED WHEEL, HUB-BORING AND BOXING MACHINE.

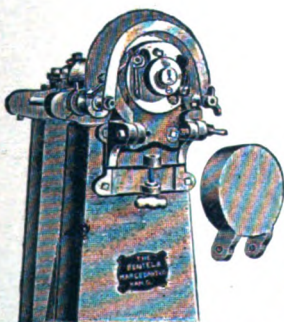
THE BENTEL & MARGEDANT COMPANY.
MANUFACTURERS OF
WOOD WORKING MACHINERY.
HAMILTON, O., U.S.A.



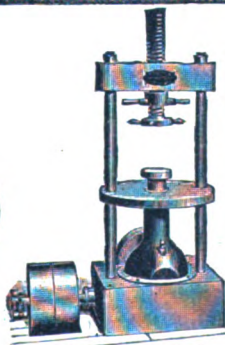
HEAVY GIANT WHEEL TENONER.



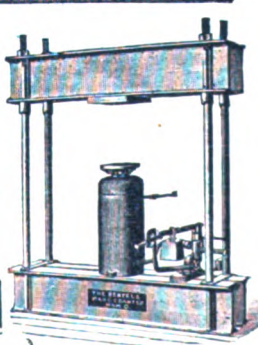
Hub Band Grinding and Polishing Machine.



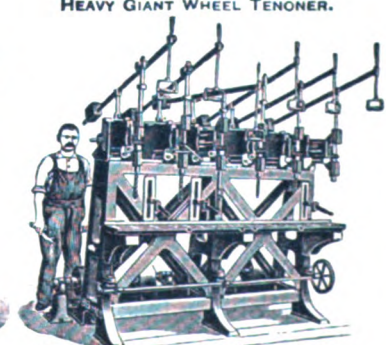
Top of Felly-Rounding Machine.



Improved Cam Press.



Hydrostatic Wheel Press.

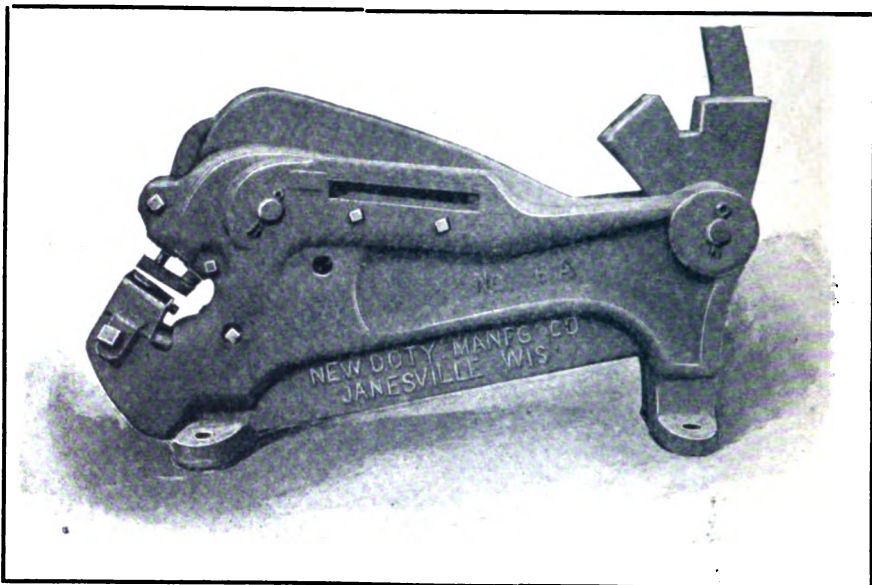


Vertical Six Spindle Gang Boring Machine.

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Combined Punch Shears

THE accompanying illustration is a cut of the New Doty Manufacturing Co.'s combined punch and shears, especially designed for the use of wagon and carriage makers and blacksmiths. It will punch a $\frac{1}{2}$ in. hole in $\frac{1}{2}$ in. iron, or a $\frac{1}{4}$ in. hole in $\frac{1}{2}$ in. iron, or cut $2\frac{1}{2}$ in. x $\frac{1}{4}$ in. or 6 in. x $\frac{1}{4}$ in. flat bar iron, or $\frac{1}{4}$ in. round iron or their equivalents. The knives for flat and round iron are independent of each other and of the punch, and both sets of knives, as well as punch, are at all times ready for use without any change. The machines are strong and powerful, and guaranteed to do the work as listed. The company will send with each machine all of the necessary knives for cutting flat and round iron, also necessary levers and one each $\frac{1}{2}$ in. $\frac{1}{4}$ in., and $\frac{1}{8}$ in. round punch and die. Each machine is tested in their shops, and when shipped is complete and ready for use. Weight, 300 pounds. Price, \$45.00.



NEW DOTY MANUFACTURING CO.
JANESVILLE, WIS.

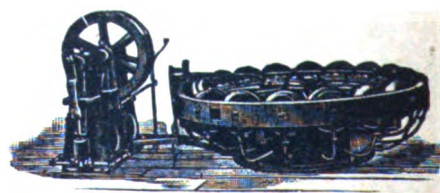


A belt never runs off the pulley until it starts to slip.
Cling-Surface will prevent any belt from slipping—we guarantee it.
Cling-Surface also preserves the belt and increases its power at least 15 per cent.
Write for a trial can. It costs nothing if it doesn't do as we say. Cling-Surface will earn the cost of a sample can in a fair-sized plant in one month.
CLING-SURFACE MFG. CO., Virginia St., Buffalo, N. Y.

OUR MACHINES

Set tires tight, and they stay tight. Give uniform dish to wheels, and they hold the dish. Compress the tire equally at all points, leaving the wheel in proper condition. Give general satisfaction to our customers.

Write for catalog with list of users and testimonials.



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Rochester, N. Y.

PREMIER

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Premier Mfg. Co.



STEEL RIMS.

When steel rims were first made for pneumatic tires the edges were flared "to prevent cutting," but it was soon demonstrated that if the tires were overloaded they would chafe, break the fabric and go to pieces quicker than when they rode the rim. It was also demonstrated that the flare and projection of the rim would permit water and dirt to enter and unseat the tire, besides the edges of the rim would strike objects in the road, wear off the paint and transmit a shock to the vehicle, exactly what the pneumatic tire is intended to prevent.

Some tire manufacturers, in competing for business, have reduced the side of the outer cover of the tire to less than half the thickness of the tread, and consequently, when the tire comes in contact with the rim, being weakest at that point, will give way first, whether the rim is flared or not. When it is brought to their attention they place the blame on the rim, when the fault is due to the construction or application of the tires.

Rims should not project beyond the tire and should hug it closely, so that the paint is never marred.

Remember this: The tire is made to protect the vehicle, the same as it does the bicycle, and no shock should ever be transmitted to the vehicle through the rim. If your tires are cut by the rim it is because the tire is too small in cross section for the load it has to carry.



Premier Manufacturing Co.,

HARTFORD, CONN.

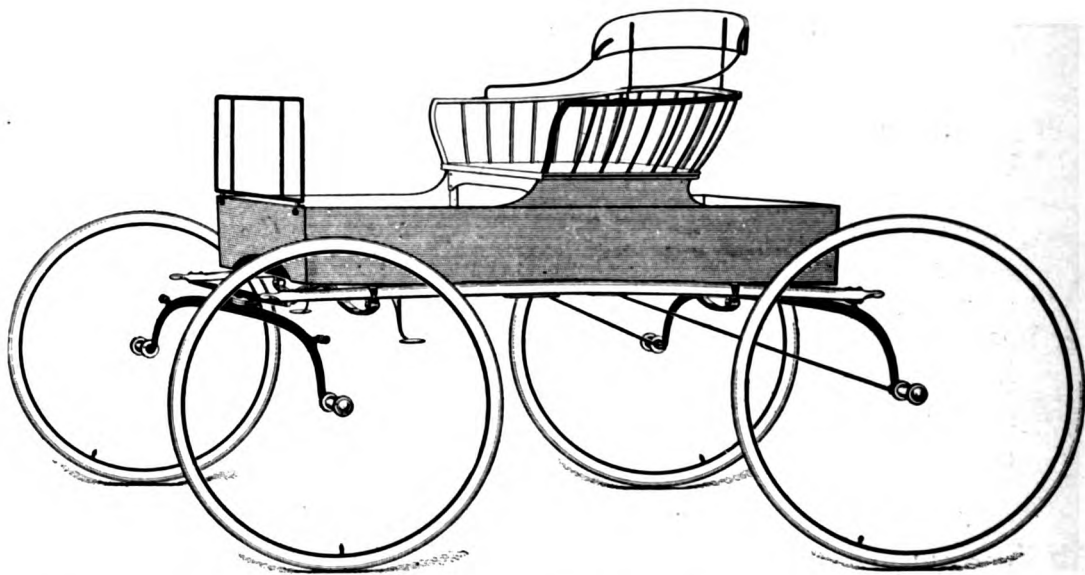
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M'F'G.
CO.PREMIER
M'F'G.
CO.

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Premier Mfg. Co.



THE above cut illustrates our Premier Tubular Gear No. 50 (with body ironed). This job has been much admired at all the recent shows and has been steadily growing in popularity with builders of high-grade work to fill a demand for a light road wagon and one to which a trotter may be safely speeded, even in the size intended for two passengers. We make it for 17 x 52 inch and 22 x 54 inch bodies, and the heaviest one weighs less than 150 pounds. Its carrying capacity equals the ordinary two-passenger pneumatic wagon, which weighs about 275 pounds. We can furnish with or without body. Let us send you one on approval, as every one of your dealers has a place on his floor for a job of this kind. For prices, etc., see our new catalogue, just issued.



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"Silver's" New Band Saws

for CARRIAGE MAKERS,
WAGON MAKERS AND
WOOD SHOPS OF EVERY KIND.

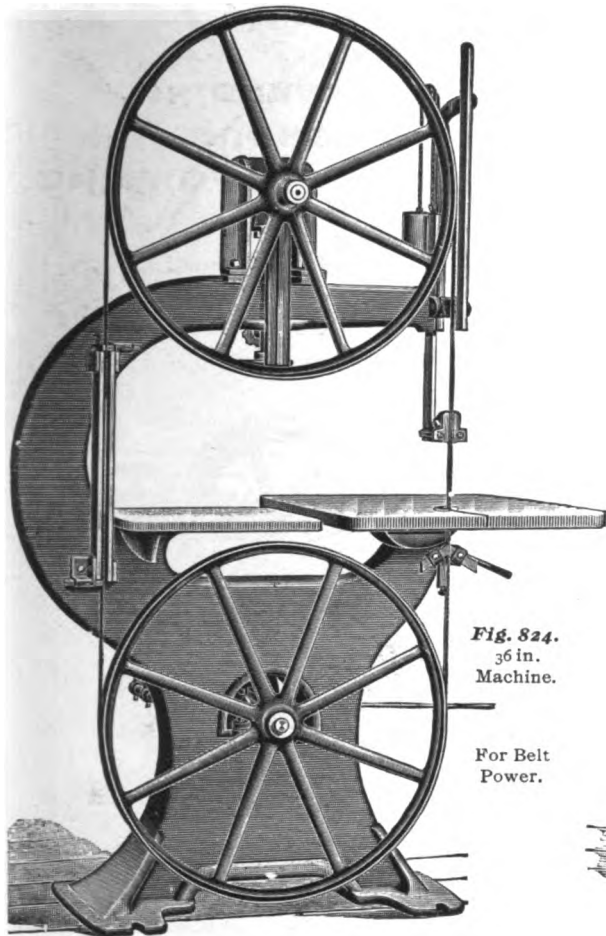


Fig. 824.
36 in.
Machine.

For Belt
Power.

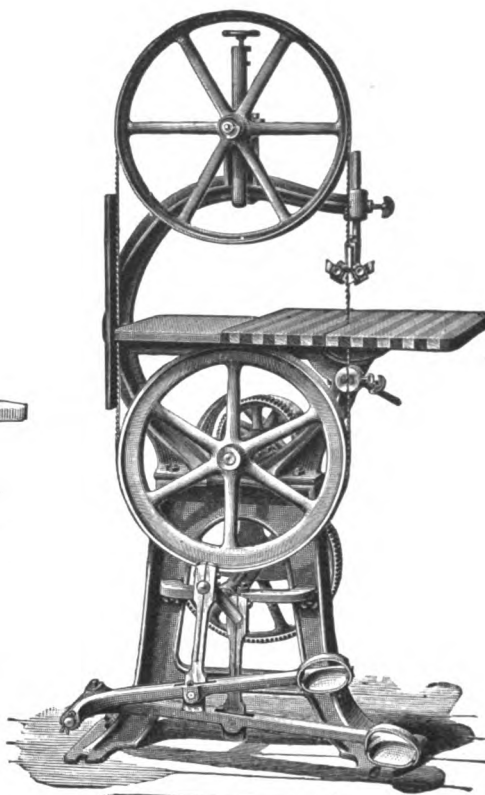


Fig. 721.
20 in. Machine. Combined Foot or Belt Power.

IN SIZES:

20 in. machine for foot or belt power.
26 in. machine for foot or belt power.
32 in. machine for belt power.
36 in. machine for belt power.

LIST PRICES,

\$50.00 to \$130.00.

Special Discount to Carriage
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These machines are symmetrical and
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and strong for the heaviest work
coming within the range of each
machine.

Ask for 1899 12 page
Circular showing all
sizes.

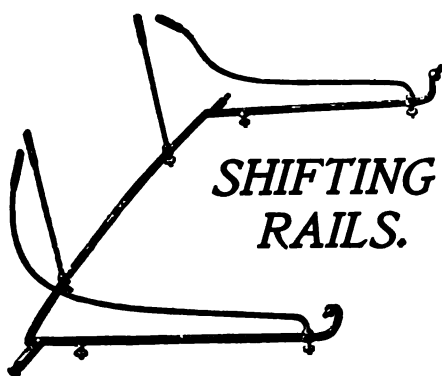
Manufacturers also of "DOLE'S"
and "SILVER'S" HUB BORING MA-
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TENON MACHINE, "SILVER'S" and
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EVERY MACHINE GUARANTEED.

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No. 3.



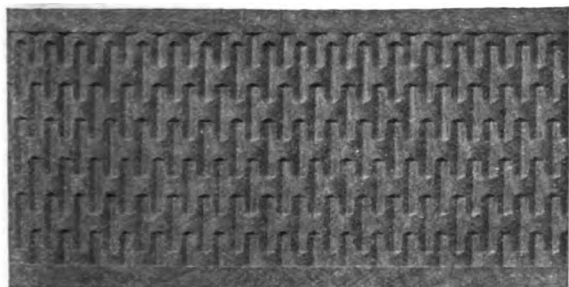
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SOCKETS.**



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PUNCHING,**SHEARING,****TIRE WELDING,****BENDING AND****FORMING,**

...FOR...

Carriage Shops**Wagon Works, Etc., Etc.**

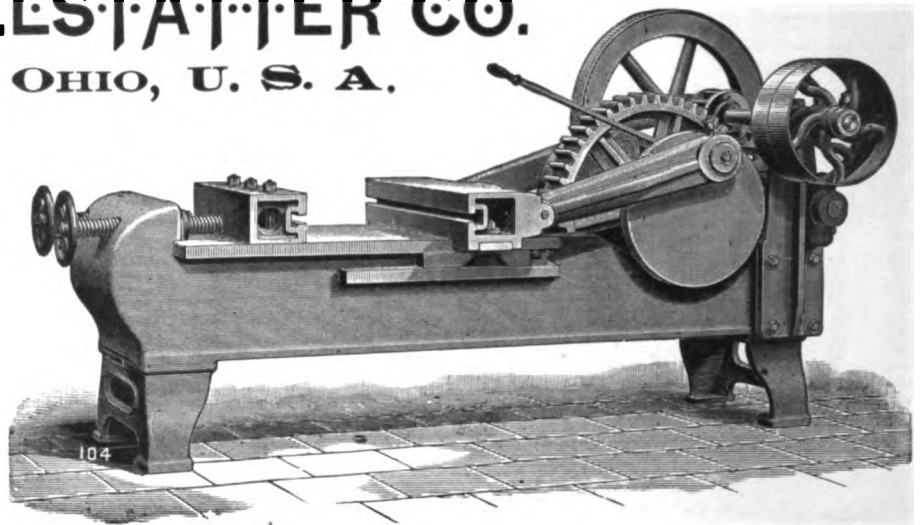
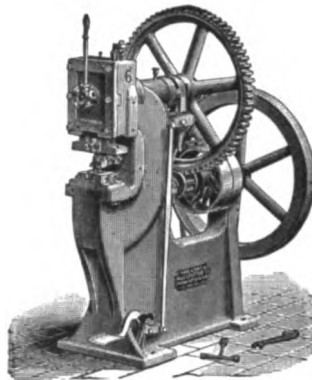
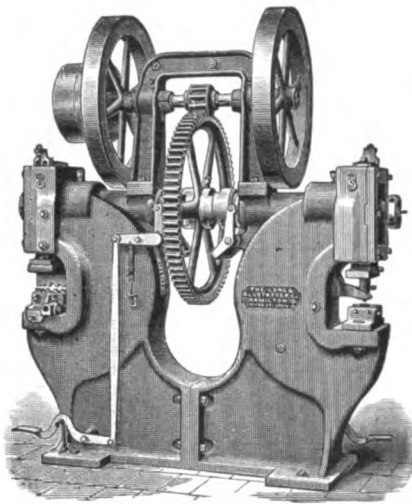
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If Interested write for Catalogue.

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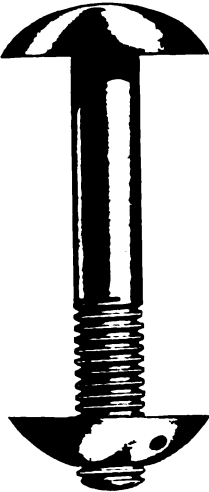
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BROOKLYN, N. Y.****Received Gold Medal, Highest Award for Anvils, at Omaha Exposition, 1898.****NO OIL****NO GREASE****The TURNER Roller Bearing Fifth Wheel****The BRADSHAW Spool Roller Bearing Fifth Wheel****The KING Patent Roller Bearing Fifth Wheel**These are by far the **BEST** and **CHEAPEST** Roller Bearing Fifth Wheels on the Market for all kinds of Vehicles.

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Leave Buffalo Mondays, Wednesdays and Fridays 5 p. m. Arrive Cleveland 5:30 a. m.

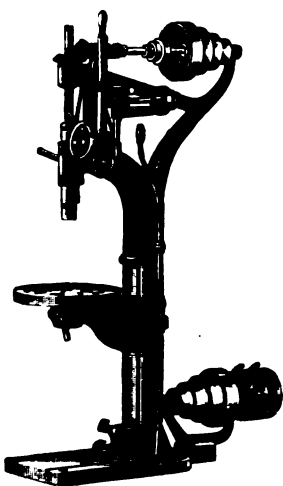
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inches in cast iron**

without strain in any way. It is a B. F. Barnes 20-inch upright drill and is the best upright drill of its size made anywhere. We make larger sizes equally as good and earnestly advise that you carefully compare this drill with others—any others—before you buy. Book Free.

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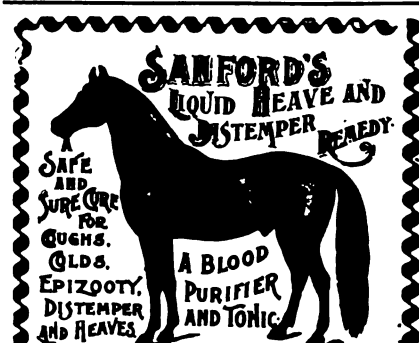
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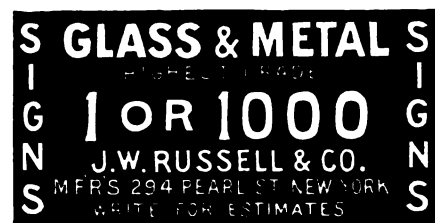
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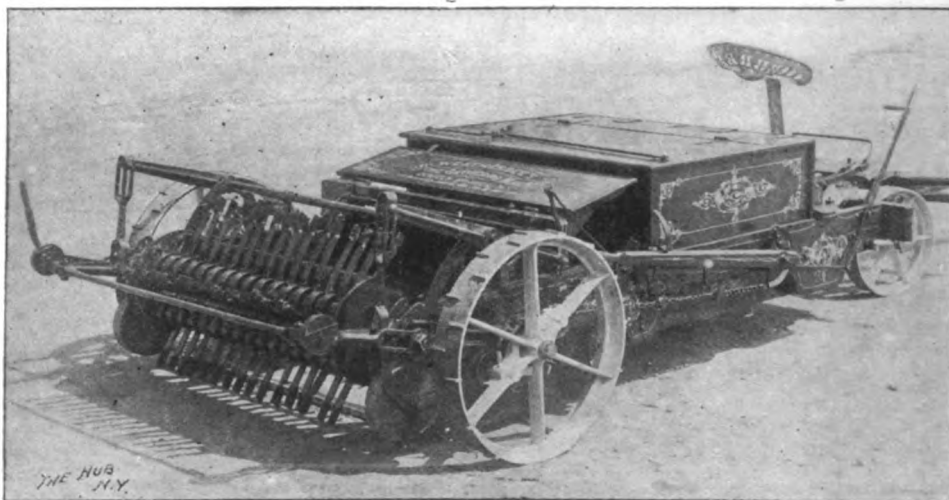
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WEATHERBEE'S STONE GATHERING MACHINE



PATENTED.

THIS INVENTION WHICH IS HEREWITH ILLUSTRATED, IS A MACHINE FOR GATHERING STONE,
AND CONSISTS OF THE FOLLOWING PARTS :

FIRST:—An efficient picking device for loosening stones in the surface of the ground, thus facilitating the operation of the gathering device.
SECOND:—A revolving propelling device by which the stones are driven from the ground into a box or receptacle suitably located to receive them, guides being provided to direct the course of the stones to the receptacle.
THIRD:—A mechanism for supporting, adjusting and regulating the propelling device in position, said mechanism being automatic in operation, thus rendering the revolving propeller self-adjusting during operation.
The machine will work on uneven ground. It works well on ground that is sowed and seeded down any time after sowing until the grain is four or five inches high, and does no injury. It is a benefit to grass land, the rake that goes ahead to loosen the stone does the most of the cultivation, but the cylinder does a part, as it is intended to run very close to the ground, there being wheels under each end to adjust it to the uneven surface. These wheels can be raised or lowered, according to condition of ground. The land can be rolled before or after picking stone. It will work on a side hill either going up or down, but draft is less going lengthwise. It is a fine thing for a stony garden. It not only cleans up stone, weeds, etc., but pulverizes the ground and prepares it for seed. It will pick up stone from the size of a butternut to one weighing twenty pounds at the rate of five acres per day on ordinary stony land. The machine can be worked as easily on meadow land as a combined mower and reaper. On plowed land, where hilly, three horses can be used, if necessary. The machine holds from 800 to 1,000 lbs. of stone at a load, gathering this amount in from three to five minutes. After the stones are in the receptacle they can be easily shoveled into a wagon or pile.

Would like to arrange with responsible company to manufacture this machine on a royalty basis, or I would sell patent for a reasonable price
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FITS ANY CANDLECAP.
USE OIL IN PLACE OF CANDLES
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MOST PRACTICAL DEVICE ON THE
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MADE IN FOUR LENGTHS.

3 inch.	For Short Stem Lamps.	Burns 8 hours.
4 "	" Station Wagon "	" 10 "
5 "	" Brougham "	" 12 "
6 "	" Coach "	" 14 "

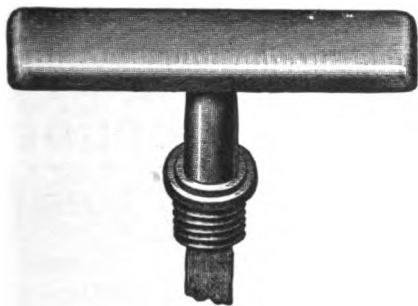
PRICE TO THE TRADE 85 CTS. PER PAIR, NET.

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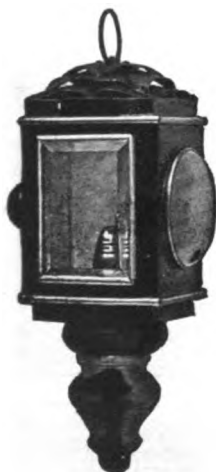
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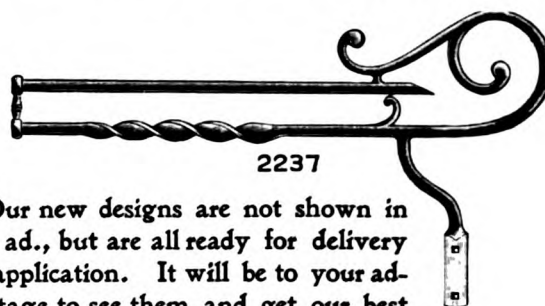
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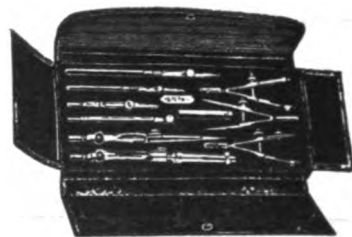
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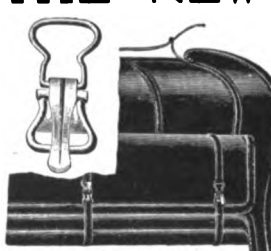
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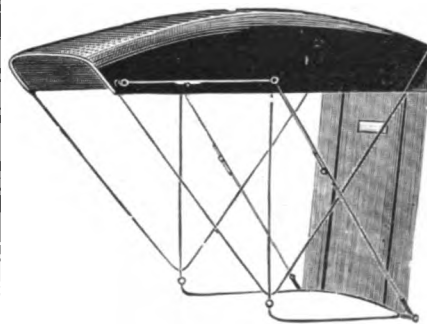
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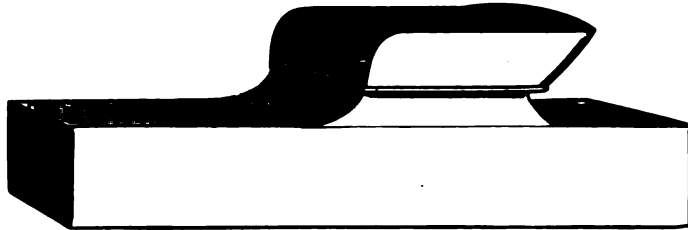
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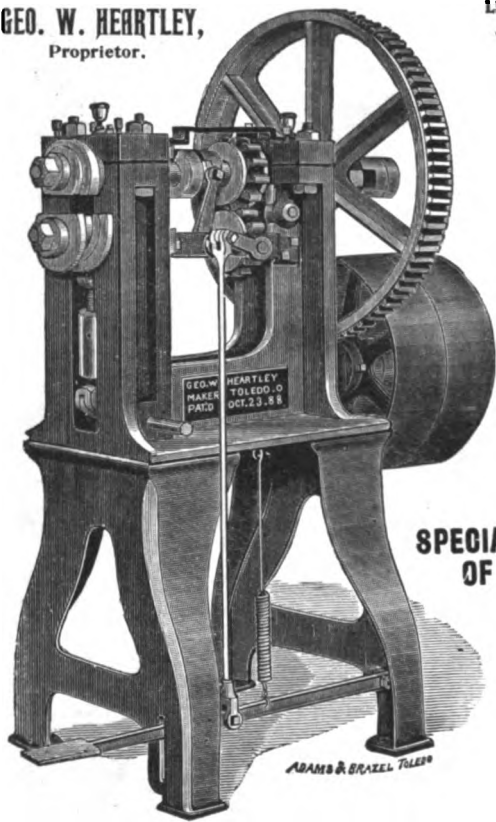
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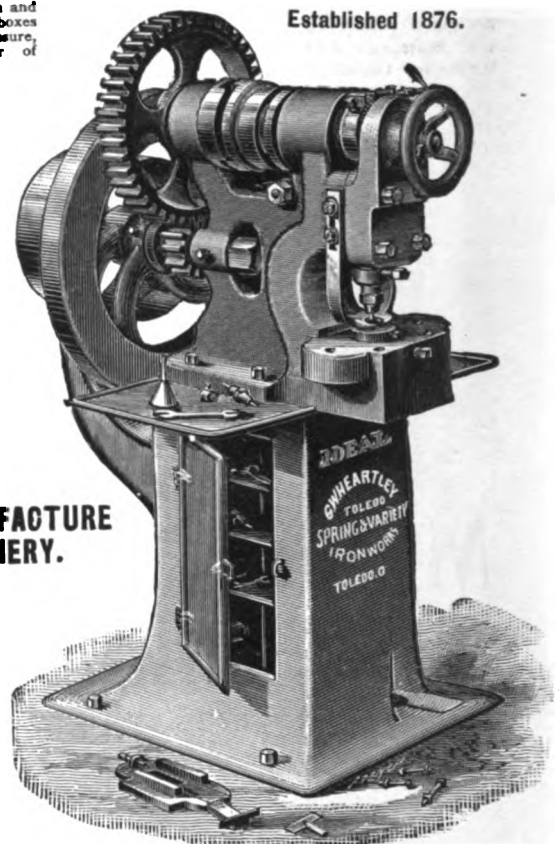
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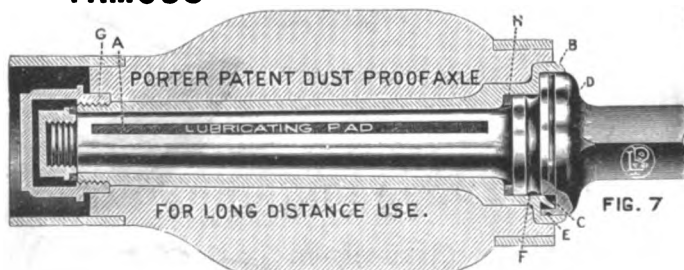
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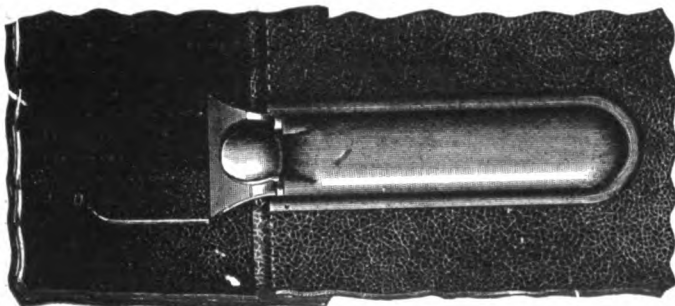
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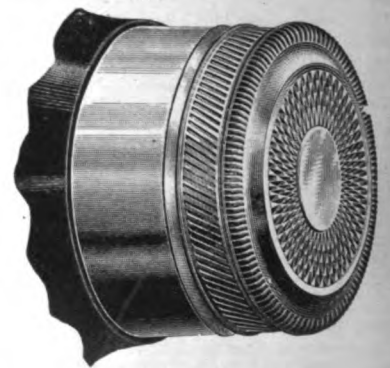
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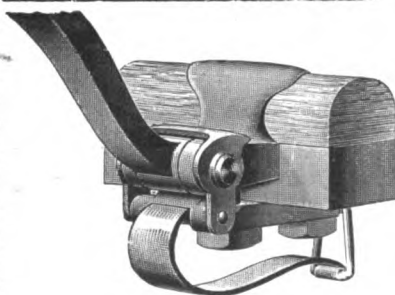
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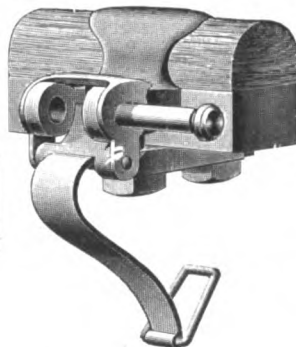


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OTHER TIRES WEAR BETTER, COST A
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MAKE THE STAYING KIND, AND FURNISH
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The Hub

MAY

1901



VOL. XLIII

NO. 2

TRADE NEWS PUBLISHING CO.

PUBLISHERS

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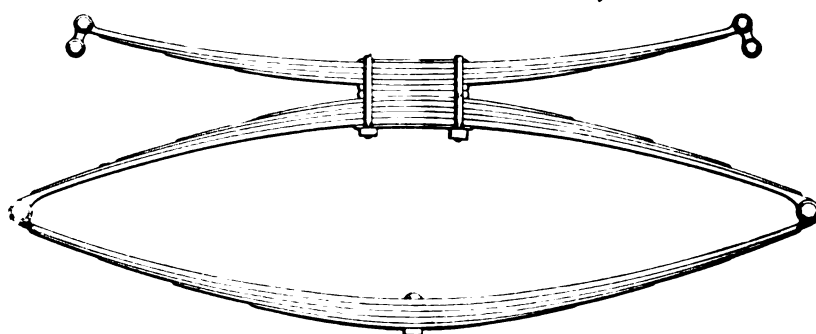
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ARE ABSOLUTELY THE FINEST MADE.



WE take pleasure in furnishing samples of the colors we make, so that the consumer may be convinced of the richness and tone of our colors before purchasing.



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Is *Economy* one of them? Perfect Method can give it to you by increasing the output of your paint shop *without any increased expense.*



Is *Beauty* one of them. Perfect Method can give it to you with greater uniformity and less uncertainty than any other system can.



Is *Rapidity* one of them? Perfect Method can give it to you without any risk of the work cracking, peeling or scaling. It's the quickest *safe* system known. You can rush work with it and not sacrifice any of the durability or beauty of the job.



Let us tell in greater detail about the advantages of *Perfect Method*. Send for the P. M. Booklet or let us make tests for you.



THE SHERWIN - WILLIAMS Co., PAINT AND COLOR MAKERS.
CLEVELAND, CHICAGO, NEW YORK, NEWARK, MONTREAL, BOSTON, TORONTO, SAN FRANCISCO, KANSAS CITY.



DETROIT STEEL & SPRING COMPANY

DETROIT,

MICH.

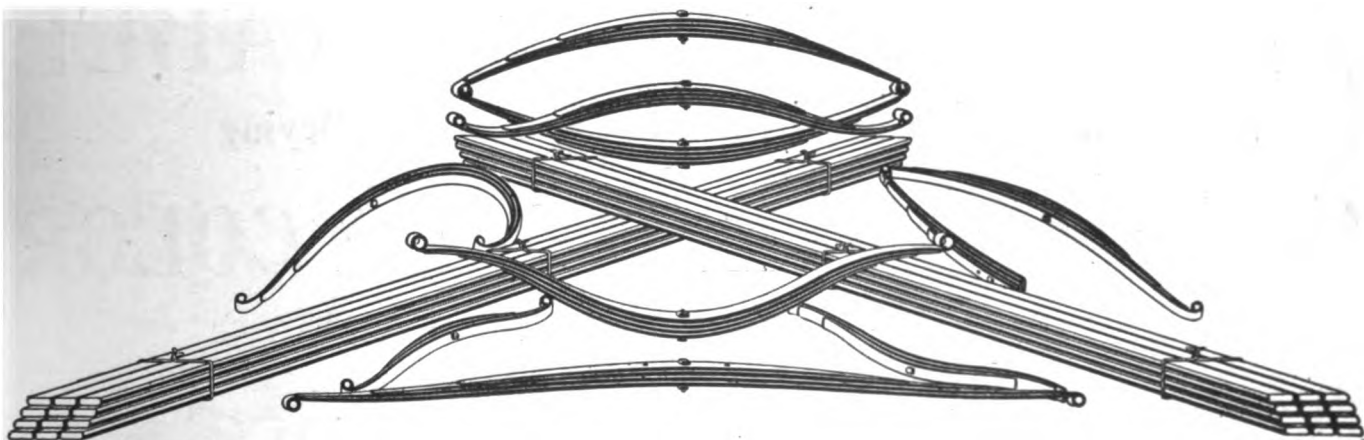


TRADE MARK

— MANUFACTURERS OF —

ALL KINDS
OF.....

CARRIAGE AND WAGON SPRINGS



**Soft Welding and
Machine Straightened**

Steel Tire.

**All Grades and Sizes
of Spring Steel.**

Please mention "The Hub" when you write.

JOHN W. MASURY & SON.

MANUFACTURERS OF

Superfine
Coach Colors
and Varnishes.

NEW YORK and CHICAGO

Perfection is what we all strive for

WE CLAIM TO HAVE ATTAINED IT
IN OUR CARRIAGE VARNISHES.

TRY THEM AND FIND OUT FOR YOURSELF

THEY ARE

BRILLIANT AND DURABLE

Remarkably Free Flowing and Quick Drying

GOOD BODY AND PALE IN COLOR

WHAT MORE DO YOU WANT?

EMIL CALMAN & CO.,

Makers of Fine Carriage Varnishes

299 Pearl Street,

NEW YORK.

Please mention "The Hub" when you write.

....HANG THIS UP WHERE YOU CAN SEE IT..

The Smaller Picture is our
HOT ROLLING MILL

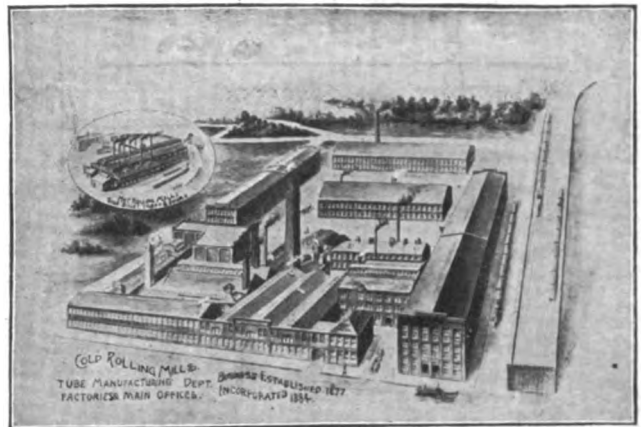
The Larger Picture is our
COLD ROLLING MILL

and

MANUFACTURING
DEPARTMENTS.

We are completely installed
to manufacture

(and have been manufacturers in this line since 1877.)



STEEL

HOT ROLLED ANNEALED AND PICKLED
BAND AND STRIP in
Open-hearth, Bessemer and our own
"SWEDOH."

COLD ROLLED for all kinds of Pressed,
Stamped and Drawn Work.

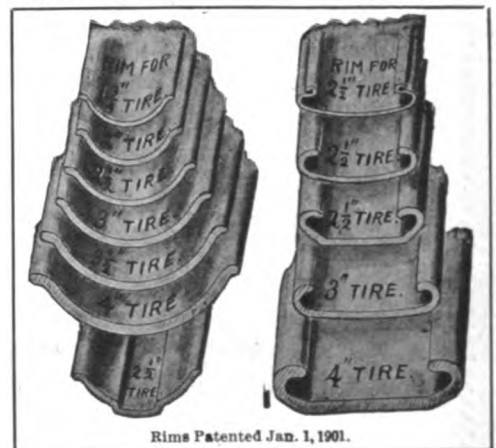
CARRIAGE-SPRING AND Tire Steel
Special Quality rolled to order.

RIMS

[Rims patented Jan. 1, 1901]

HIGH CARBON
SPRING STEEL
like these, and
of other shapes
and sizes.

Manufacturers find it unneces-
sary to finish further before
enamelling or painting.



Rims Patented Jan. 1, 1901.

TUBING

The Celebrated Brass Lined
"CLINCHER"
for Automobiles, Motor Cycles, etc.

THE WILMOT AND HOBBS M'F'G CO.

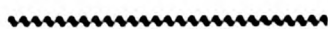
NEW YORK : 258 BROADWAY,

Main Office and Works, BRIDGEPORT, Conn.

All over the World

STANDARD CARRIAGE VARNISHES

are used by the leading manufacturers.



**We Make
VARNISHES
to suit all Climates.**



**Let us know your requirements. We can fill them.
Correspondence Invited.**

Standard Varnish Works,

**The Largest Varnish Works in the World.
Factories covering 7 acres, Elm Park, Staten Island, N. Y.**

GENERAL OFFICES:

**2620 Armour Ave.,
CHICAGO.**

**29 BROADWAY,
NEW YORK.**

**23 Billiter St.,
LONDON.**

En todas partes del mundo los

STANDARD BARNIZES PARA CARRUAJES

son usados por los Fabricantes mas prominentes



Hacemos

BARNIZES

**acomodables a todas condiciones
climáticas.**



**Sirvanse informarnos de sus requisitos, podemas satisfacerlos todos.
Sollicitamos abran correspondencia.**

Standard Varnish Works,

**Las mas grandes Fabricas del mundo. Fabricas que cubren
un terreno de 7 acres, en Elm Park, Staten Island, N. Y.**

OFICINAS PRINCIPALES:

**23 Billiter St.,
LONDRES.**

**29 BROADWAY,
NEW YORK.**

**2620 Armour Ave.,
OHICAGO.**



**Is The Printer
To Blame**

FOR A POOR CATALOGUE IF YOU GAVE HIM

POOR CUTS

NO SUCH TROUBLE WITH OUR CUTS.
HALF TONES, ZINC ETCHINGS, WOOD
ENGRAVINGS, PEN-AND-INK AND
WASH DRAWINGS. WE ALSO FUR-
NISH IDEAS, ILLUSTRATE AND
WRITE ADS. ✦ ✦ ✦ WRITE US.

CP ACHERT & CO.
221 FIFTH AVENUE
COR QUINCY CHICAGO

WHY USE SANDPAPER?

1. When you can get the same results in just **ONE-HALF THE TIME** by using Steel Wool?
2. When you can save just **ONE-HALF** the labor by using Steel Wool?
3. When you can do the same job **MORE EASILY** by using Steel Wool?

**USE
BUY
TRY**

STEEL WOOL.

It cuts more quickly and more uniformly than sandpaper, does not clog or "gum up," and adapts itself readily to the shape of carvings, mouldings, etc., etc.

Steel Wool is very light, but exceedingly durable, and in corners or cornices, and on mouldings where sandpaper is used only with the greatest difficulty, labor and expense of time, Steel Wool does the work easily, with little labor, and in just one-half the time. Special Discounts to Consumers for Large Quantities. Write for Quotations.

BUHNE STEEL WOOL CO.,
15 Dev Street NEW YORK.

W. P. FULLER & CO., Pacific Coast Agents, - San Francisco.
GEO. E. WATSON CO., Chicago Agents,
38 Randolph Street, Chicago.

CARRIAGE BUILDERS AND REPAIRERS OUR TWENTIETH CENTURY VERMILIONS

REPRESENT THE HIGHEST POSSIBLE STANDARD IN MODERN COLOR MAKING.

Our line comprises over FIFTY different brands which cannot fail to please the most SCEPTICAL in quality and price. If you want to get the very BEST quality and SAVE the jobbers' PROFIT, which is generally exorbitant, place your orders with us. Samples and quotations cheerfully furnished upon application.

PURITAN COLOR WORKS,

BRANCHES:
BALTIMORE, MD.
PHILADELPHIA, PA.

Color Manufacturers,

BOSTON, MASS.

TRADE **VALENTINES** MARK.
"THE STANDARD FOR QUALITY."

Manufacturers of

VALENTINE

HIGH GRADE

Coach and Car Varnishes
and Superfine Colors.

LAWSON

Coach, Furniture and
House-Painters'
Varnishes and
Japans.

NEW YORK,

57 Broadway.

CHICAGO,

390 Wabash Avenue.

BOSTON,

170 Purchase Street.

PARIS,

21 Rue de Lappe

FACTORIES :

NEW YORK.

CHICAGO.

ESTABLISHED

1832.

Harrisons' Diamond Finish Outside

Harrisons' Diamond Finish Inside

represent the very acme of varnish making, they are the PUREST, the CLEAREST and most TRANSPARENT; possess the DEEPEST and most BRILLIANT LUSTRE, are the PALEST in color and the HARDEST.

Harrisons' Sirocco Drier

is the strongest White Drier made. It is practically colorless and mixes readily with linseed oil.

Harrison Bros. & Co., Inc.

WHITE LEAD, COLORS, PAINTS,
VARNISHES AND CHEMICALS.

35th & Grays Ferry Road,
PHILADELPHIA.

27 Lake Street,
CHICAGO.

117 Fulton Street,
NEW YORK.

72 Broad Street,
BOSTON.

KEYSTONE PRIMER
FOR WOOD AND IRON
PREPARED EXPRESSLY FOR CARRIAGE WOODWORK

DRIES HARD & QUICKLY.	WILL NOT CRACK OR SCALE.	SURFACES CLOSE AND FINE.
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GROUND FINE IN BEST RAW LINSEED OIL
MANUFACTURED BY THE
KEYSTONE PAINT & FILLER CO.
MUNCY, PA. U.S.A.

KEYSTONE BLACK FILLER
FOR COACH, CAR AND SAFE FILLING
THE ONLY BLACK FILLING IN THE WORLD

DRIES HARD & QUICKLY.	RUBS EASILY.	SURFACES CLOSE AND FINE.
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HOLDS OUT VARNISH BETTER THAN ANY OTHER FILLER.
MANUFACTURED BY THE
KEYSTONE PAINT & FILLER CO.
MUNCY, PA. U.S.A.


KEYSTONE JAPAN PASTE
OR GEAR PAINT
FOR FILLING CARRIAGE GEARINGS AND BODIES.

DRIES HARD & QUICKLY.	EASY TO SANDPAPER.	SURFACES CLOSE & FINE.
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HOLDS OUT VARNISH BETTER THAN ANY OTHER
MANUFACTURED BY THE
KEYSTONE PAINT & FILLER CO.
MUNCY, PA. U.S.A.

Please mention "The Hub" when you write.

PALM, FECHTELER & Co.	YOU KNOW OUR <h1>TRANSFERS</h1> IF NOT, TRY THEM.	3 W. 13 TH ST. NEW YORK. 45 LA SALLE ST. CHICAGO. 207 ST. JAMES ST. MONTREAL.
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A Carriage Mfg. Co. bought an \$18.00 cut of the G. R. Eng. Co. It captured an order for 150 jobs at \$80 each. A competing concern lost the above order, because of a poor \$7.00 cut.

Who gains?

Grand Rapids Engraving Co.,
Carriage Catalog Makers. GRAND RAPIDS, MICH.

"We wish to compliment you on the excellent work you have done for us. We consider the catalog you furnished us the finest we ever sent out."
 The above is the unanimous verdict of all the carriage people we have done work for.

The Modern Sign Writer

AND



Up-to-Date Ornamenter

IS WORTH DOUBLE THE PRICE.

5 Plates of Alphabets, Sign Lay-Outs and
 Scrolls, printed in Colors. Price, \$2.00 postpaid.

TRADE NEWS PUBLISHING CO.,
 24-26 Murray St., New York.

Varnish Troubles

and Color Kinks.

May be avoided by
 using the best goods
 on the market.

WRITE TO

FELTON, SIBLEY & CO.,

Makers of High Grade Varnishes
 and Superfine Colors.

136-140 North 4th Street,
 PHILADELPHIA.



Please mention "The Hub" when you write.

THE

SOLE AGENTS IN U. S. FOR
NOBLES & HOARE'S
—FAMOUS—
ENGLISH VARNISHES

Japan Gold Size,
Rough Stuff
* DRY AND READY
MIXED.

IMPORTERS
OF
THE BEST
English
WHITE LEAD
ESPECIALLY SUITED FOR
CARRIAGE WORK.
Genuine English Vermilions,
Cadmium and Perfect Yellows,
and other Fine Coach Colors.
Japan Colors, Bronze Powders, Etc.

28 & 30 FRANKFORT STREET, NEW YORK

EVERY-THING

Big Four

The
'Buffalo
Route'

to



BERRY BROTHERS

(LIMITED)

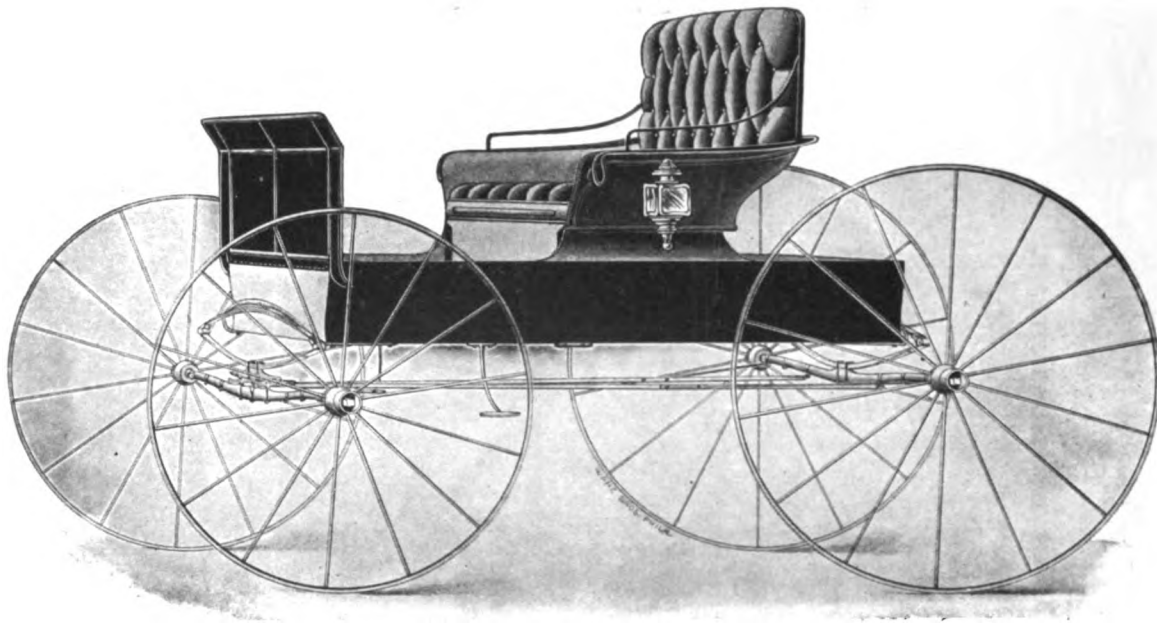
MANUFACTURERS OF



CARRIAGE VARNISHES

NEW YORK, BOSTON, PHILADELPHIA,
BALTIMORE, CINCINNATI, CHICAGO,
ST. LOUIS, SAN FRANCISCO.

FACTORY AND
MAIN OFFICE **DETROIT**



KEATOR
& WELLS
Cortland, N.Y.

**Convex-Concave
Seat and Body.**



**A decided novelty
and a very hand-
some and practi-
cal job.**

127. K. & W. Road Wagon.

KEATOR
& WELLS
Cortland, N.Y.

Every dealer should see our line of
QUICK SELLERS.

They sell on sight, and always make a profit.

**A corning buggy without
an equal in value.**



**Extra long from seat to
dash.**



**No. 111 is the
same job with
piano body.**

KEATOR
& WELLS
Cortland, N.Y.



113. Ideal Buggy.

Please mention "The Hub" when you write.

KEATOR
& WELLS
Cortland, N.Y.

Boston Varnish Co.

We Challenge the World for
Varnishes of Superior Merit.

MANUFACTURERS OF

Write Us for
Samples and Prices.



Finest Railway

THEY ARE
FREE.

AND

It's for your inter-
est to test our var-
nishes in comparison
with the varnishes you
are now using.

Superior Carriage

Varnishes & Japans



SAMPLES FOR
THE ASKING.

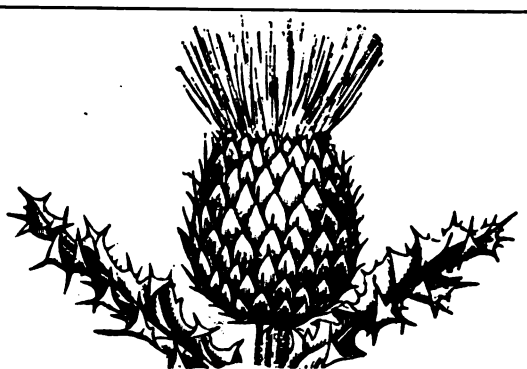
BOSTON, MASS.

PURE OIL VARNISH

MANUFACTURED ONLY BY

THE PECKHAM VARNISH Co.,

*We warrant this Var-
nish to be made from
Pure Oils; therefore
it will not turn white
or crack.*

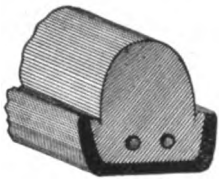


Trade - Mark.

IS THE
BEST
VARNISH
MADE.

Factory: BROCKTON, MASS.

Boston Office: 130-132 Lincoln St.



DAVIE & Co.

MANUFACTURERS AND DEALERS IN

Rubber Goods,

LET US FIGURE FOR YOUR SPRING TRADE.

44

1310-1314 Wallace Street,
PHILADELPHIA, PA.



BICYCLE
TIRES
CARRIAGE
TIRES

**THE
DIAMOND
TIRES.**

MOTOR VEHICLE
TIRES

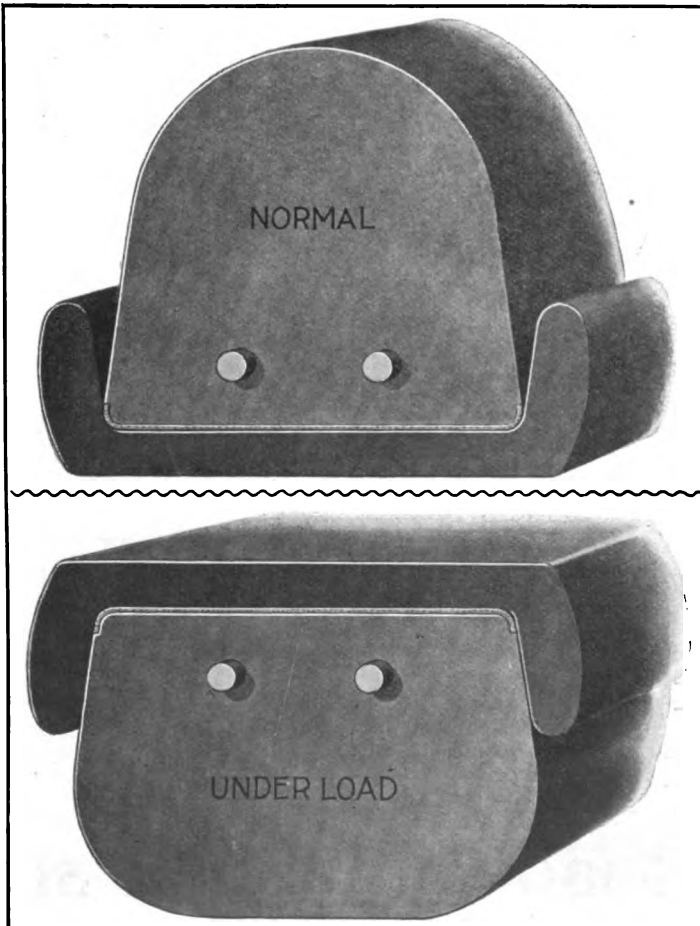
**DIAMOND TIRES
ARE CONSIDERED RELIABLE**

By those who know from experience. There are more Diamond Tires placed on Bike Wagons this year than all others combined. Why? Because consumers are finding out that the tire is the best and that the makers use a fine grade of rubber, strong fabric, and know how to put them together.

BRANCHES where punctures
are repaired:

New York City, 215 W. 53rd St.
Boston, 7½ Appleton St.
Buffalo, 9 W. Seneca St.
Chicago, 431 Wabash Ave.
Philadelphia, 435 North Broad St.

MADE IN AKRON, OHIO,
BY
**THE DIAMOND
RUBBER CO.**



Carriage and... Automobile Trade

FURNISHED —

RUBBER, CHANNELS, WIRE

AND TOOLS FOR APPLYING.

SIZES: 3-4 IN. to 3 IN.

—
This Tire Fits Into the Standard Channel.
—

REVERE RUBBER CO.,

BOSTON.

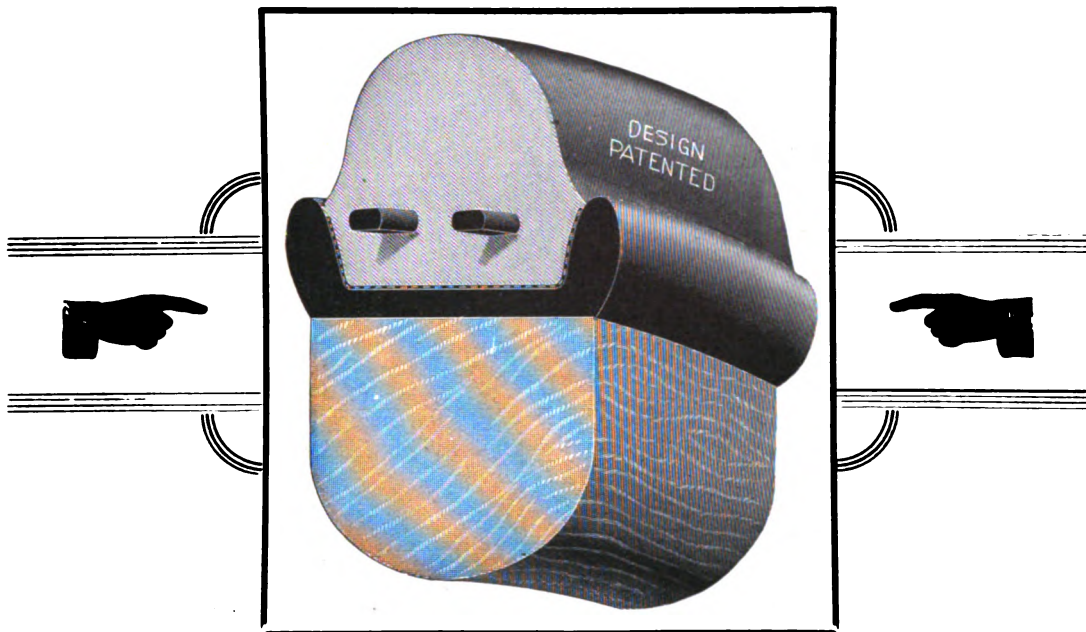
NEW YORK.

CHICAGO.

Please mention "The Hub" when you write.

THE INDIA

IS THE BEST AND WE PROPOSE TO KEEP IT SO.



Manufacturers of all kinds of vehicle tires.

Pneumatic carriage tires,

Pneumatic automobile tires,

Solid car tires,

Solid endless tires for motor vehicles.

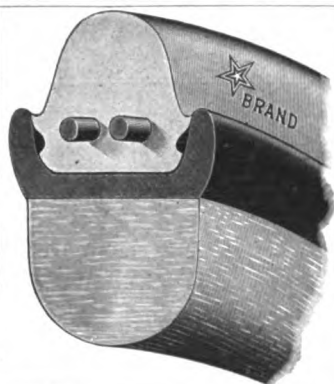
Prices cannot be compared without comparison of quality.

This we invite.

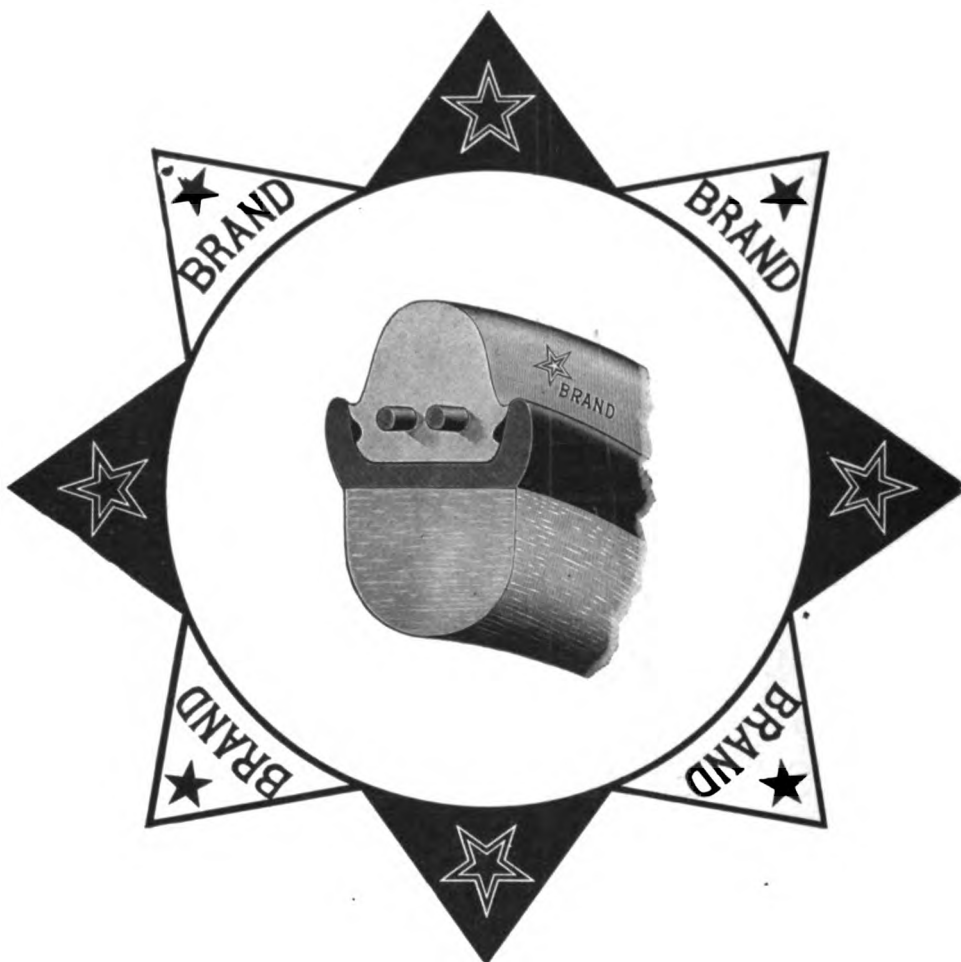


INDIA RUBBER CO.,

AKRON, OHIO.



OUR STAR BRAND SOLID RUBBER TIRE, HAVING PROVED ITSELF TO BE ALL WE CLAIM, WE NOW CHALLENGE THE WORLD TO PRODUCE ITS EQUAL. IT FITS ALL STANDARD CHANNELS. THE GROOVE IN THE SIDES OF THE RUBBER PROVIDES FOR PROPER DISPLACEMENT WHEN UNDER A LOAD, STOPS THE CREEPING, MAKES IT RIDE EASIER AND LAST LONGER. IT HAS NO PEER.



WE supply Tools at small cost with complete instructions for putting on in your own shop, and guarantee to teach you to do as perfect a job of Rubber Tiring as can be done, or no sale. We respectfully solicit your business.

••

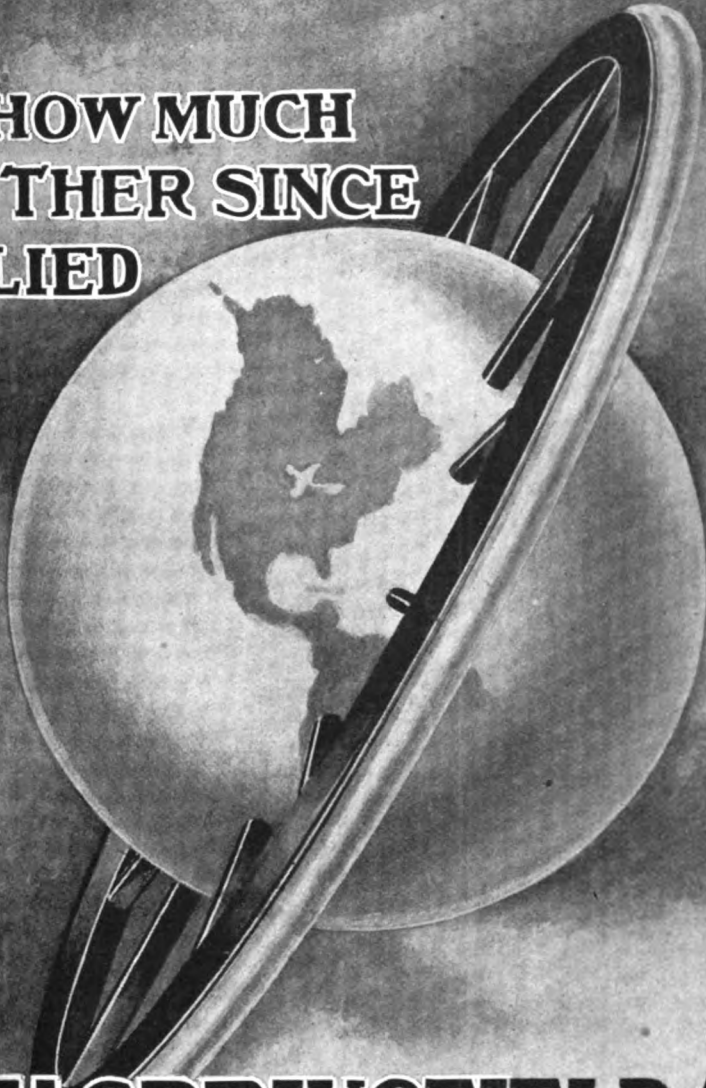
BATAVIA RUBBER TIRE CO.,
BATAVIA, N. Y.

WESTERN BRANCH: STAR RUBBER TIRE CO., MOLINE, ILL.

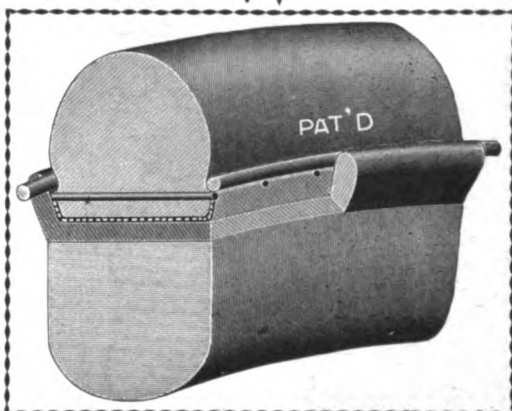
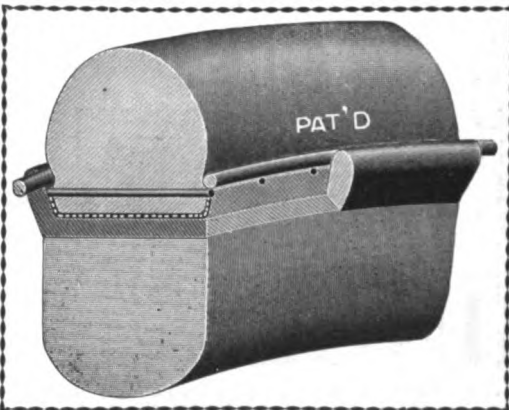


THE WORLD MOVES

**BUT-HOW MUCH
SMOOTHER SINCE
SUPPLIED
WITH**



**KELLY-SPRINGFIELD TIRES
THE BEST
SOLID RUBBER TIRE ON
EARTH.**



Our Claims are Broad!

NEATEST IN APPEARANCE.

EASIEST RIDING.

GIVES TWICE THE SERVICE OF THE
OLD STYLE WIRE AND BAND TIRES.

EASILY APPLIED WITH AN INEX-
PENSIVE MACHINE.

WRITE US FOR CATALOGUE AND
SAMPLE AND WE WILL GIVE YOU
"FACTS" THAT WILL PROVE OUR CLAIMS.



Firestone Tire and Rubber Co.,
AKRON, OHIO.

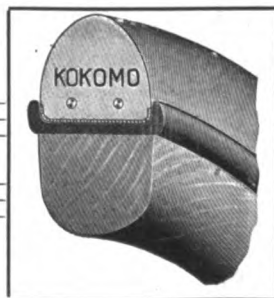
BRANCHES:

1788 Broadway, New York City.
367 Wabash Avenue, Chicago, Ill.

65 Beverly Street, Boston, Mass.
2212 Olive Street, St. Louis, Mo.

GOOD TIRES,
GOOD PRICES AND GOOD TREATMENT

ARE WHAT YOU



CAN GET FROM THE

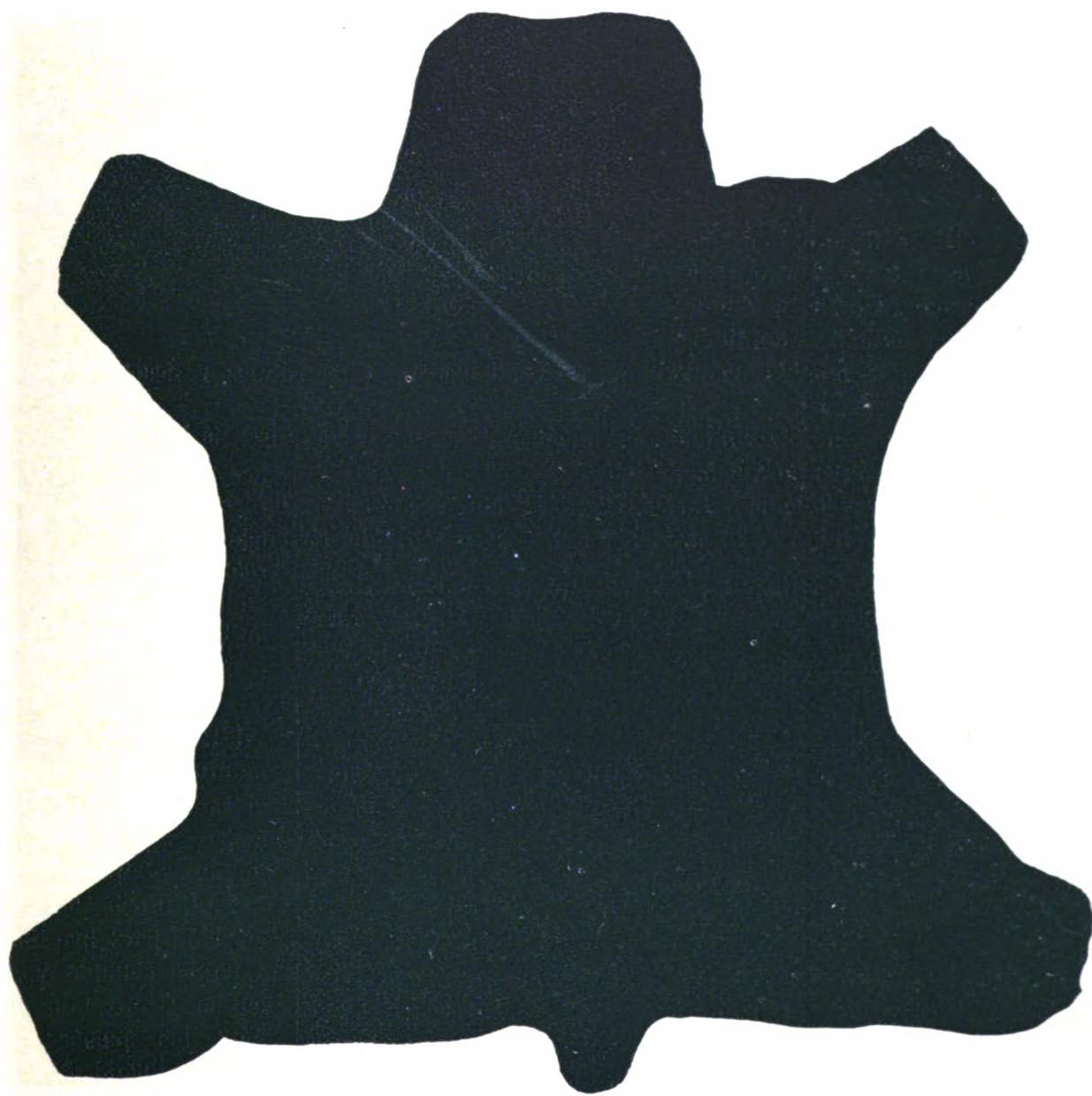
Kokomo Rubber Co.
Kokomo, Indiana.

CHICAGO BRANCH, 135-137 LAKE STREET,

W. H. COOLIDGE & CO., Managers.

Please mention "The Hub" when you write.

**SPECIALISTS IN COLORED MOROCCO
FOR CARRIAGE LININGS
AND TRIMMINGS.**



RUTTER & TURNER,

Leather Manufacturers,

32 Spruce Street, - NEW YORK, U. S. A.

ESTABLISHED 1850.

Please mention "The Hub" when you write.

MANTIENEN SE INFORMADOS SOBRE CARRUAJES Y AUTOMOBILES AMERICANOS.



THE HUB es el periodico mas importante que trata del ramo de Carruajes, Vagones, Carros y Automobiles, y cada edición contiene grabados de los estylos nuevos mas recientes de vehiculos con dimensiones y descripciones para la fabricación de los mismos.

Cada edición tiene tambien uno ó mas diseños de escala para el úso de fabricantes con los pormenores mas completos para la construcción.

Los Departamentos Técnicos de **THE HUB** son reconocidos en todas partes del mundo como autoridades y contienen informaciones de valor y de importancia en todos los asuntos

relativos a los Talleres de Madera, de Forjador, de Guarnición, y de Pintura.

El periodico **THE HUB** se publica mensualmente y el negociante en el ramo que quiere estar á par del progreso no puede trabajar sin ello.

El precio de una suscripción para los Estados Unidos, Canada y Mexico es \$2.00 por año y para los paises de la Union Postal \$3.00 un año. Estos precios son

libres de portes y en moneda acuñada de los Estados Unidos. Hagen se las remesas por ordenes postales de correo pagadero á

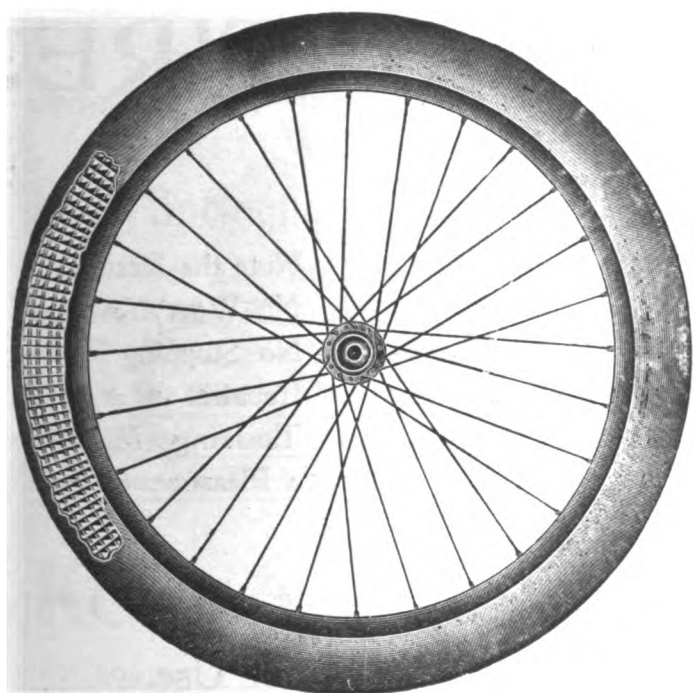


TRADE NEWS PUBLISHING CO.,

24-26 MURRAY STREET,

NEW YORK, U. S. A.

EMERY AUTOMATIC PNEUMATIC TIRE



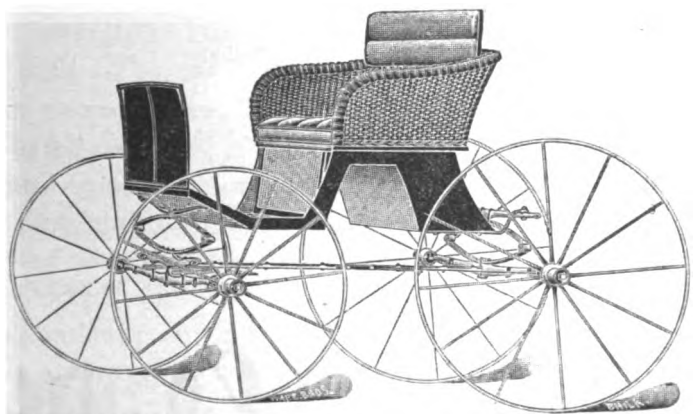
Cannot be punctured.
Is very light. Made in all sizes.
No Wires or Bolts needed.
Is Indestructible.
*For Carriages, Automobiles,
and Bicycles.*

The Emery Tire Co.

17 Washington Street,
PROVIDENCE, R. I.


J. T. CLARKSON & CO.,

AMESBURY, MASS.



Manufacturers of

Traps and Pony Vehicles In Variety.

THE Princess Pony Phaeton is one of our attractive styles.
We build the celebrated Maplewood Carts for domestic
use and export. Cuts and prices on application. 

FACTS.**FACTS.**

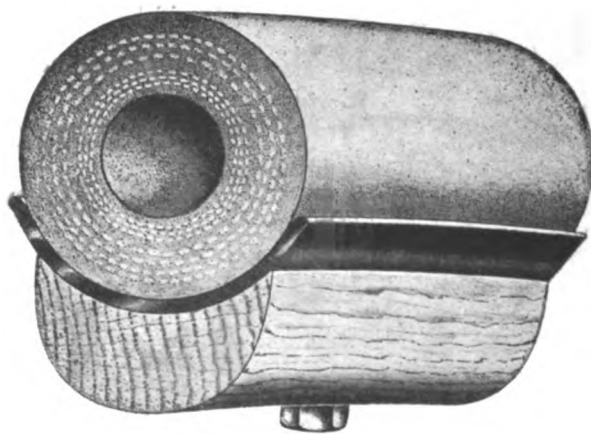
THE NEW YORK VEHICLE TIRE

.....IS THE.....

Only Pneumatic

LONG DISTANCE TIRE.

**NOTE ITS
CONSTRUC-
TION. ♣ ♣ ♣
More Material. ♣
Larger Mileage.**



**Note the Results.
No Worry. ♣ ♣
No Stopping for
Repairs. ♣ ♣ ♣
Touring Made
a Pleasure. ♣ ♣**

The only pneumatic tire that is always Ready for Use.
Already adopted by a majority of the leading carriage
builders. No other tire EVER received such endorsement
the first season. All facts substantiated with proof.

PROOF ONE :

The following testimonial is from City Fire Marshall Brymer, of Brooklyn, who probably has had as much experience with pneumatic tires as anyone we can name. It is interesting from the fact that it thoroughly sets forth the claims that we make for our tire in those points so much desired by the driving public, and so necessary for the success and pleasure in the result of its use :

NEW YORK BELTING AND PACKING CO., Ltd.

Brooklyn, March 8th, 1901.

GENTLEMEN :—

The pneumatic tires of your make used on the wagon built by the I. S. Remsen Co. have proved in every way a complete success. I speak from experience in this matter and can say my experience with having used other pneumatic tires, caused me to conclude to go back to steel tires for my severe driving, until your tire was brought to my notice, which I heartily endorse for anyone who cannot put up with breakdowns of any kind. Their riding qualities are equal, if not better than previous ones used.

Yours respectfully,

(Signed) ALONZO BRYMER.

New York Belting & Packing Co., Ltd.,

25 PARK PLACE, NEW YORK, N. Y.

BRANCH STORES :

BOSTON : 24 Summer Street. PHILADELPHIA : 724 Chestnut Street. ST. LOUIS : 411 No. 3d Street. CHICAGO : 150 Lake Street.
INDIANAPOLIS : 229 South Meriden Street. BALTIMORE : 101 Hopkins Place. SAN FRANCISCO : 509 Market Street.



WE have no connection with the CONSOLIDATED RUBBER TIRE CO., but our intimate relations with the largest Importers of Crude Rubber in America enable us to furnish SOLID RUBBER TIRES of UNAPPROACHABLE QUALITY at prices the TRUST cannot duplicate.

STANDARD SHAPE, TWO WIRES, FULL SIZE, but LIGHT WEIGHT, owing to their HIGH QUALITY.

EACH LENGTH BEARS OUR FULL NAME AND TRADE-MARK.

Kelly Springfield Rubber Tire Co.,

We are not in the Trust. We pay no ROYALTIES, but put the VALUE IN THE RUBBER.

We have a Five Year Contract Guaranteeing Quality and Workmanship, also that the Compound will Remain Unchanged.



FOR SAMPLES AND PRICES, ADDRESS

Kelly Springfield Rubber Tire Co.

Incorporated August 31, 1899.

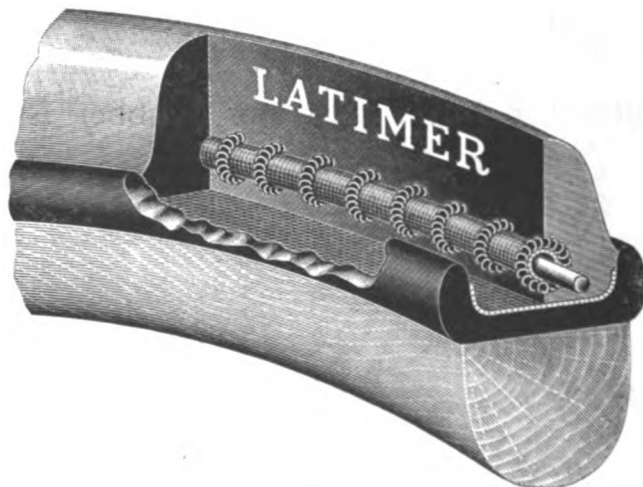
ROBERT KERCHEVAL, President.

DAVENPORT, IOWA.



VEHICLE TIRES.

The Only Tire in Which Retaining Wire Is So Protected That All Danger of Cutting Out Rubber Is Eliminated.



**THE
LATIMER RUBBER TIRE
CO.**

NEW YORK,
15 Platt Street.

CHICAGO,
24 South Clinton Street.

WORKS:
HUNTLEY, ILLINOIS.

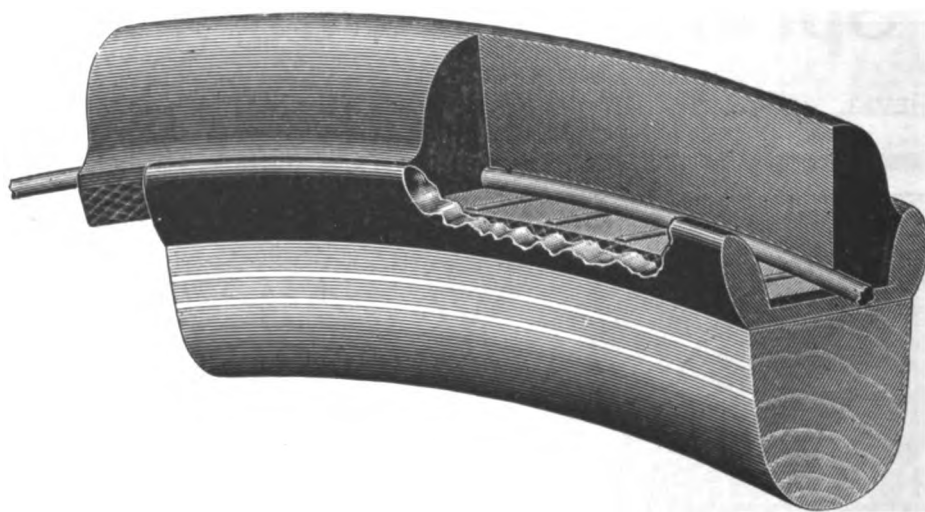
Please mention "The Hub" when you write.

"WEMAKA"

PERFECT VEHICLE TIRE

Perfection in Tire Construction.

Wise Buyers
Buy Cross Wire Tires!



CROSS WIRES are to a tire what a railroad tie is to the rail---a support.

NO EXPERIMENT---one year in service has convinced the user, manufacturer, our competitors and ourselves that it is all we claim for it.

Fifty years we have been compounders and vulcanizers of Rubber, which insures the buyer that our Rubber is right, and made to withstand wear.

N. J. CAR SPRING & RUBBER CO.,
JERSEY CITY, N. J.

Please mention "The Hub" when you write.

We make only the highest grade of tires, and our reputation for
UNIFORM HIGH QUALITY will be maintained in

HARTFORD SOLID CARRIAGE TIRES

They will be backed by the name
of this company as a guarantee
of excellence.

We shall be pleased to
have our representative
call upon those in the
trade who are inter-
ested in this finest
quality solid rub-
ber carriage
tire.



OUR TIRE MACHINES

are now ready and are attracting wide
attention and merited praise as

PERFECT MACHINES

from the standpoint of

SIMPLICITY AND EFFICIENCY.

These machines are time savers and being such
they are money savers as well.

THE HARTFORD RUBBER WORKS CO.,
Hartford, Conn.

BRANCH HOUSES:—

Boston, New York, Philadelphia, Chicago, Buffalo, Washington, Cleveland,
Detroit, Minneapolis, Denver, San Francisco.

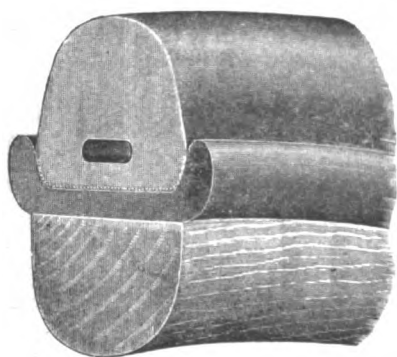
Please mention "The Hub" when you write.

RESULTS

Guaranteed
As Good
As Any
Two-Wire
Tire.

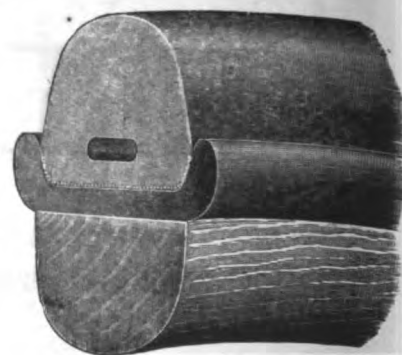
**PRICES**

Are
Reasonable.
Quality
Is The
Best Made.

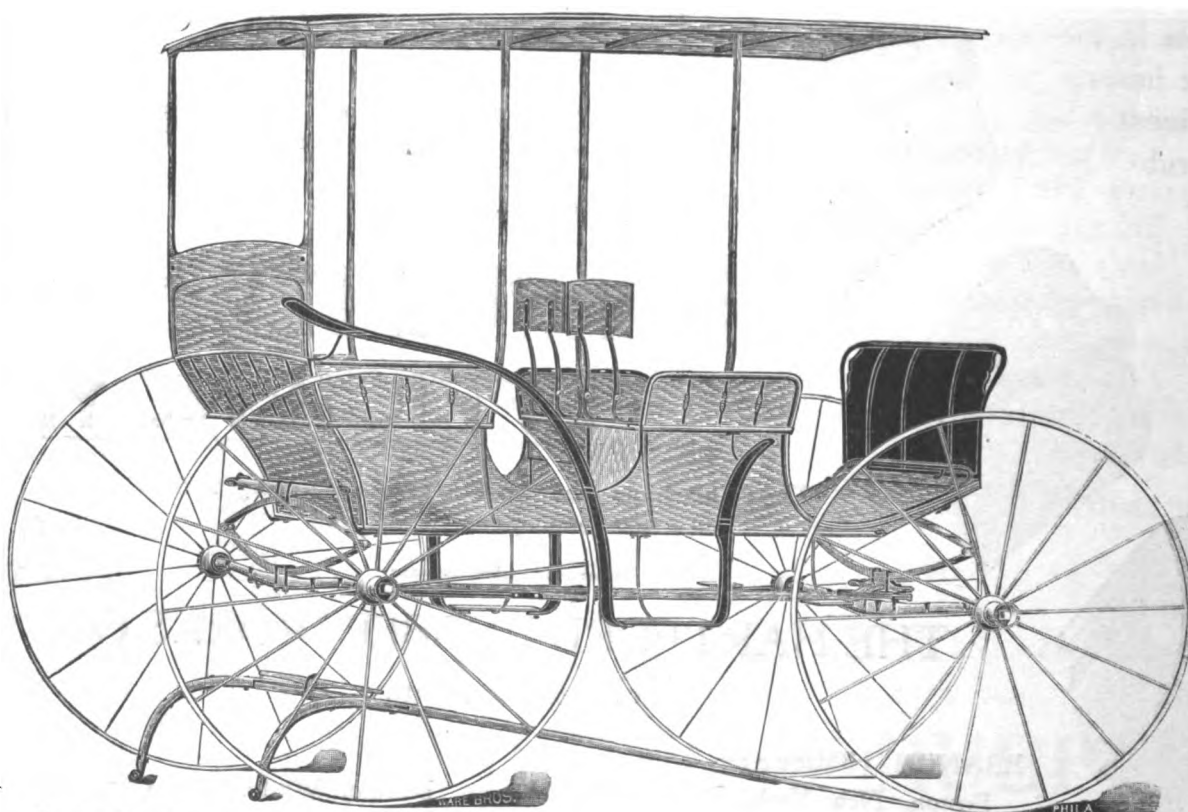


Pennsylvania Rubber Co.,

ERIE, Pa.



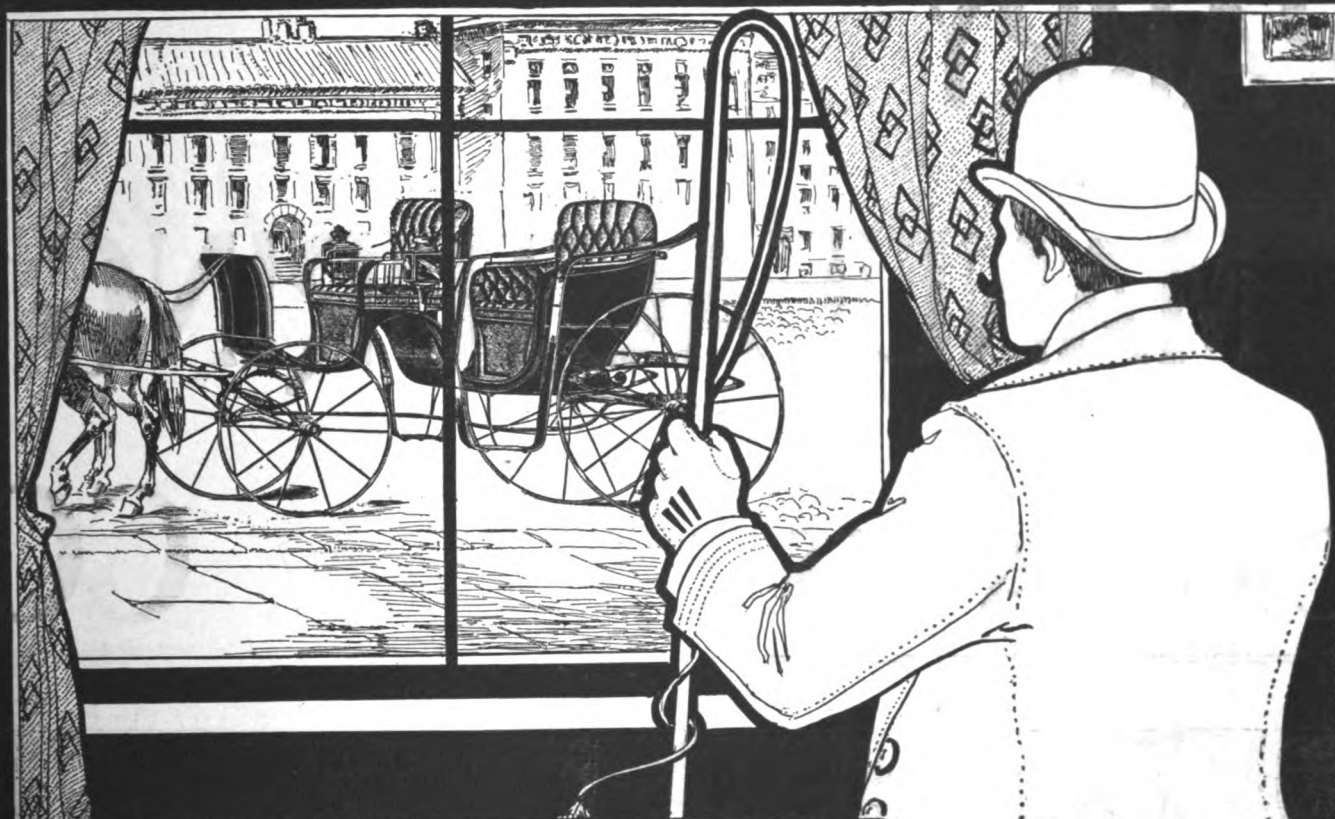
Manufacturers in the White



*of
Seats,
Bodies,
Gears
and
Gear
Parts.*

YORK WAGON GEAR CO., YORK, PA.

Please mention "The Hub" when you write.



A Babcock Driver.

The driver of a Babcock carriage is a pleased driver—every time, no matter what the style of vehicle.

Perhaps you have made a profitable demonstration of this fact.

You can be reasonably sure of it, even though you never sold a Babcock job.

Babcock vehicles have been sold

More than long enough, we believe, to prove to an intelligent trade the practical merit of a line of these carriages.

If Babcock vehicles hadn't pleased the users they wouldn't have been made and sold for as many years as they have.

Of course not.

Then, why don't you get a Babcock catalogue and get some of the money?

H. H. BABCOCK COMPANY,

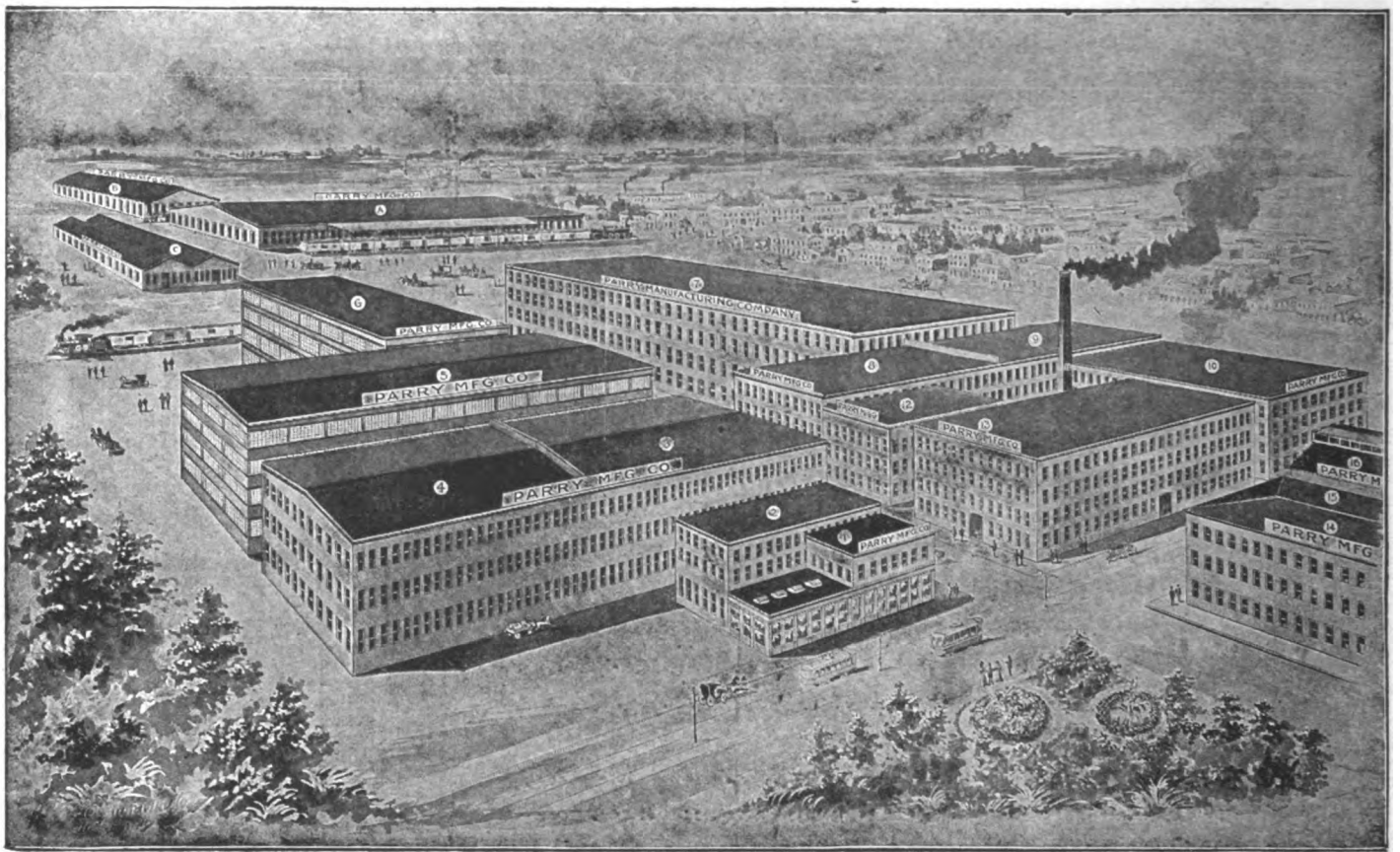
FINE CARRIAGE BUILDERS,



**WATERTOWN,
N. Y.**

CHARLES AUSTIN DATES N. Y.

PARRY MANUFACTURING CARRIAGES. CO.



**Largest
Vehicle
Factory
on
Earth.**

INDIANAPOLIS,

IND.

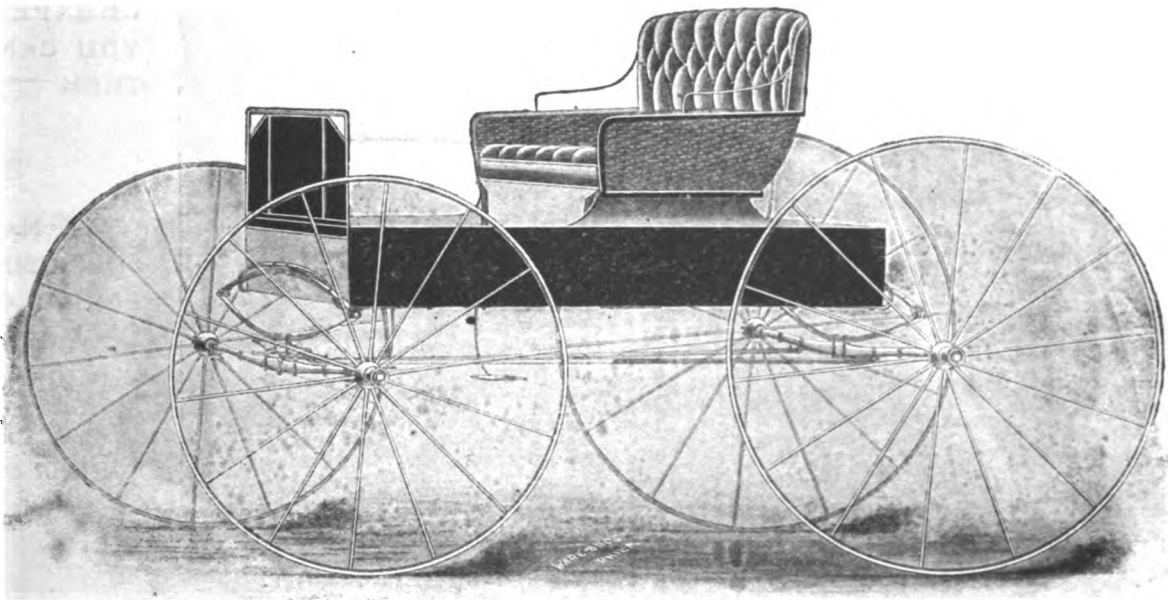
Please mention "The Hub" when you write.

STURTEVANT-LARRABEE
COMPANY
BINGHAMTON, N. Y.

STURTEVANT-LARRABEE
COMPANY
BINGHAMTON, N. Y.

BUILDERS OF

Fine Carriages and Sleighs.



No. 102 $\frac{1}{2}$. ELLIPTIC SPRING. PIANO BODY RUNABOUT.



No. 143. DOCTOR'S PNEUMATIC STANHOPE.

STURTEVANT-LARRABEE COMPANY,

BINGHAMTON, N. Y.

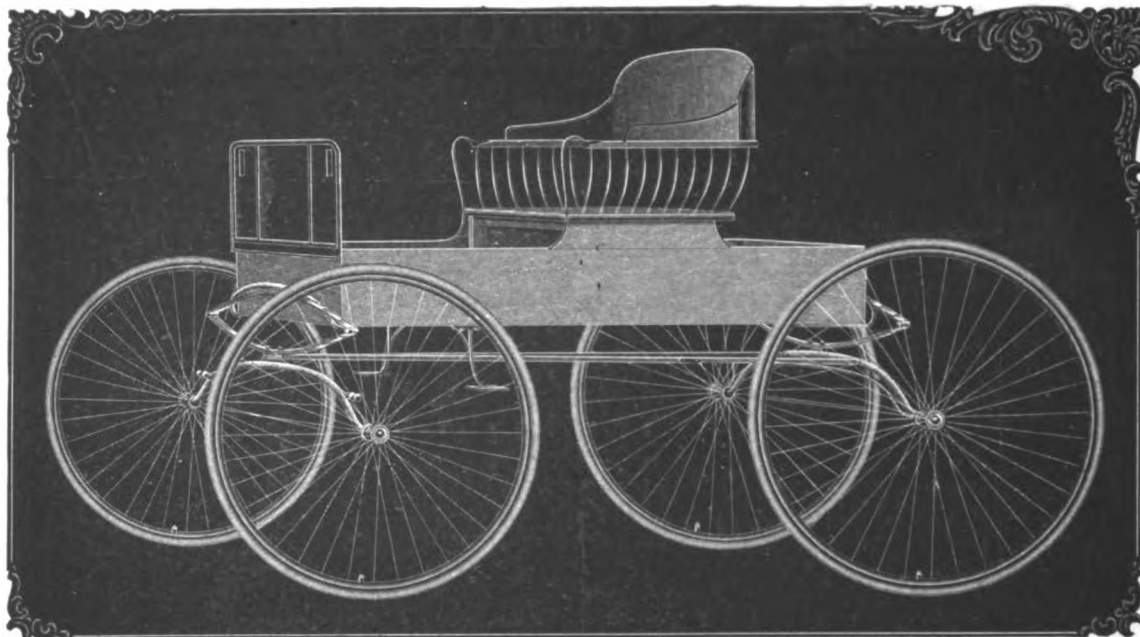
STURTEVANT-LARRABEE
COMPANY
BINGHAMTON, N. Y.

STURTEVANT-LARRABEE
COMPANY
BINGHAMTON, N. Y.

Please mention "The Hub" when you write.

THE FRANTZ "AKRON."

BODIES, BIKES IN THE WHITE, GEARS.



WE SELL THEM
CHEAPER THAN
YOU CAN MAKE
THEM



WE NAME A
SURPRISING LOW
FIGURE ON THIS
BIKE.

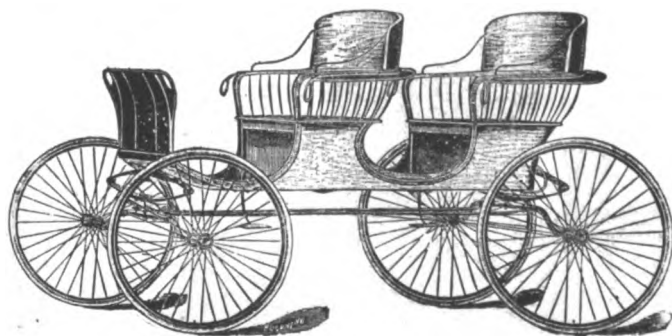


ORDER SAMPLE.

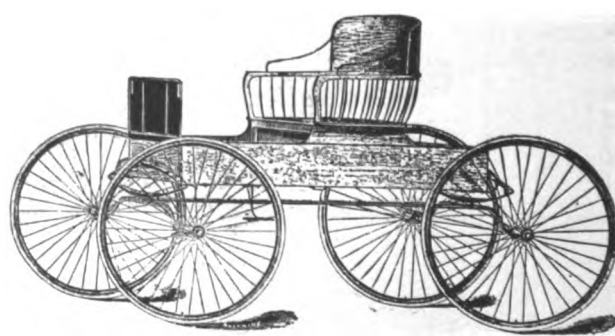
NO BETTER VALUE FOR THE MONEY ON THE MARKET.

THE FRANTZ BODY MFG. CO., AKRON, OHIO.

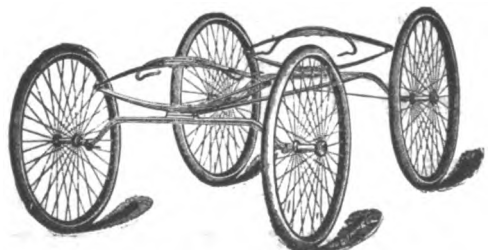
FITCH GEARS



FITCH PNEUMATIC SURREY (In-the-White).



FITCH PNEUMATIC ROAD WAGON (In-the-White)



FITCH PNEUMATIC ROAD WAGON GEAR.

PRICES TO SUIT
THE TIMES.

Send for our latest
catalogue, with
full line of gears,
wagons in-the-
white and carriage
specialties illustra-
ted.



FITCH IMPROVED BIKE AND PNEUMATIC GEAR.

We make Bike Gears and Wagons in-the-White, with Wood Hub Wheels and Solid Rubber Tires.

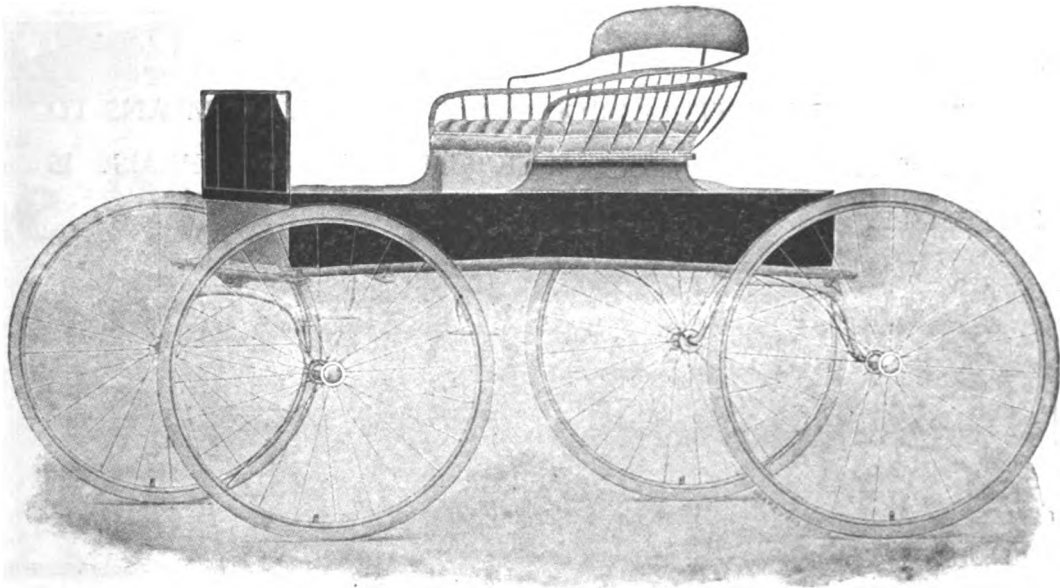
SHOWING ALL STYLES OF PNEUMATIC AND BIKE WORK.

FITCH GEAR CO., Rome, N. Y.

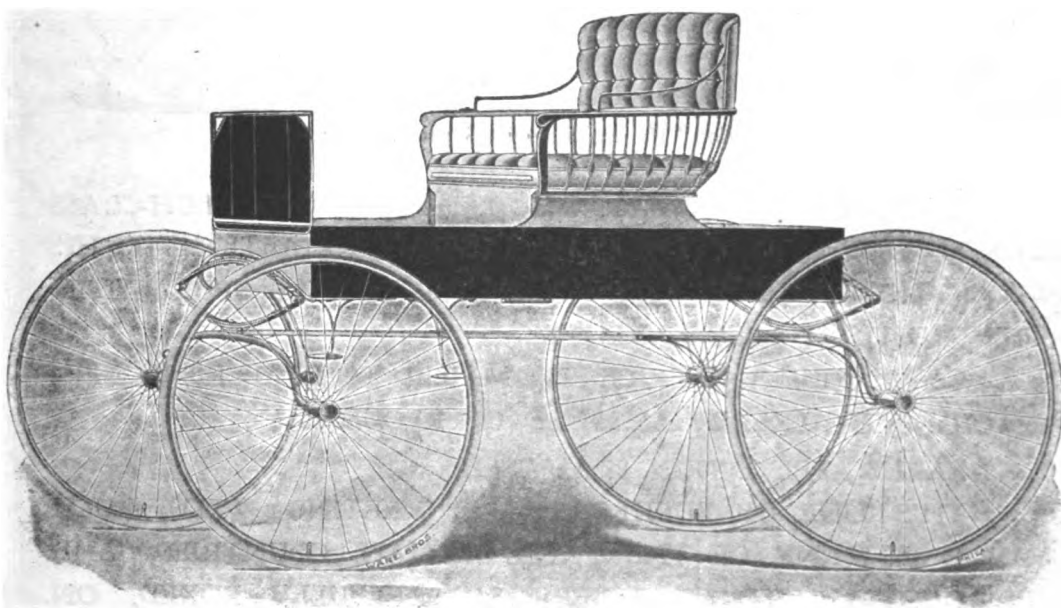
Please mention "The Hub" when you write.



Fine Carriages and Sleighs.



Combination Speed Wagon No. 131.



Pneumatic Runabout No. 130.

**CORTLAND CART and
CARRIAGE CO.**

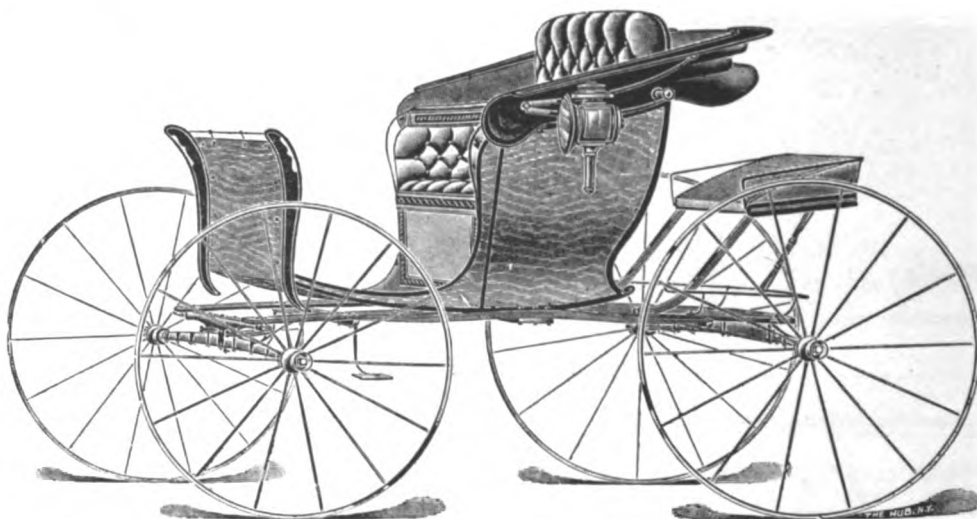
SIDNEY, N. Y.



THE SUPERIORITY IN DESIGN,

CONSTRUCTION, FINISH AND EQUIPMENT OF OUR FOUR HUNDRED SERIES BUCKBOARDS HAVE MADE THEM THE STANDARD OF COMPARISON FOR OTHER BUILDERS OF VEHICLES IN THE BUCKBOARD LINE.

THE STATEMENT, "AS GOOD AS A WATERLOO," MEANS TO THOSE WHO ARE "VEHICLE WISE," THAT HIGHER PRAISE IS IMPOSSIBLE.



"Waterloo," No. 437, Colonial Spyder Curricie.

THE CARRIAGE DEALER WHO IS CATERING TO HIGH-CLASS TRADE WILL FIND THIS LINE A DESIRABLE ADDITION TO HIS STOCK, NOT ONLY IN THE CHARACTER IT WILL GIVE, BUT IN THE PROFITS IT WILL MAKE HIM.

CATALOGUE AND PRICE LIST MAILED TO DEALERS, IN TERRITORY NOT ALREADY ASSIGNED, ON REQUEST.

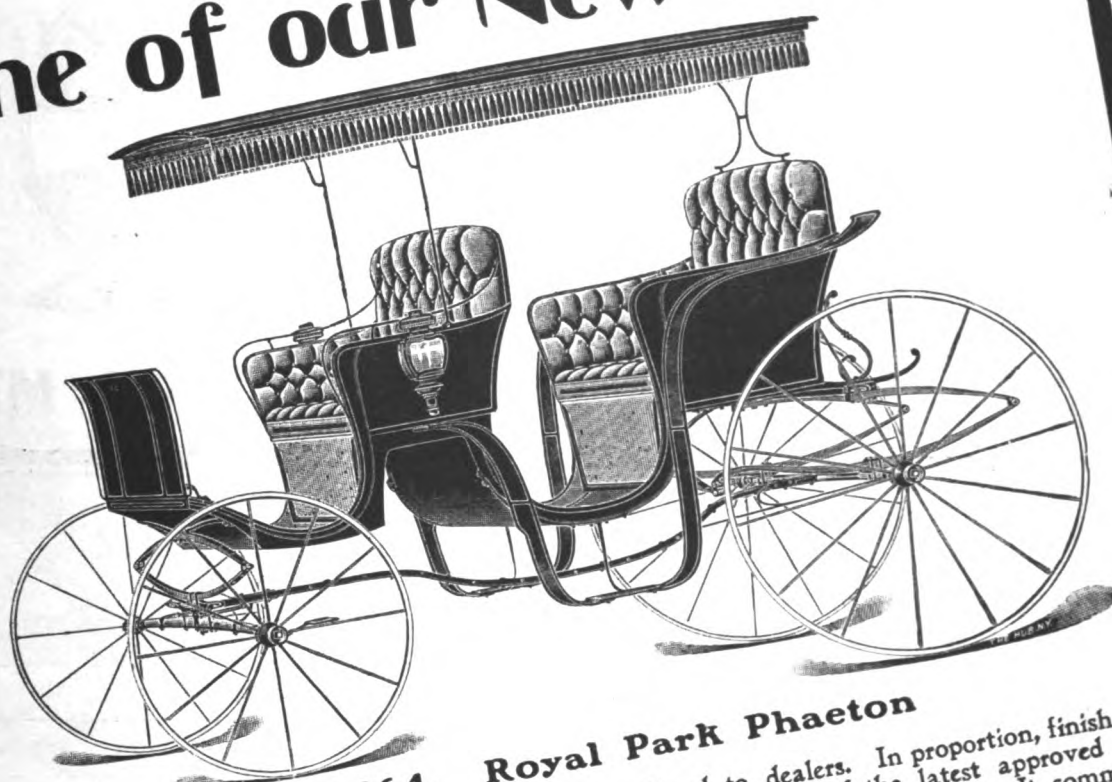
EARLY APPLICATION IS ADVISED.

THIS LINE OF BUCKBOARDS IS MEETING WITH MUCH FAVOR IN MANY OF THE PAN-AMERICAN COUNTRIES, AND WE QUOTE ATTRACTIVE PRICES, CAREFULLY BOXED, ON BOARD VESSEL AT ALL EXPORT POINTS.

WATERLOO WAGON COMPANY, Ltd.,
WATERLOO, SENECA CO., N. Y.,
U. S. A.

WAGON WATERLOO COMPANY LTD.,

One of our New Styles



No. 464. Royal Park Phaeton

We show above one of the best values ever offered to dealers. In proportion, finish and equipment it is absolutely correct in every detail. The top is of the latest approved construction and is easily removable, making a very handsome open carriage. It commands the immediate and favorable attention of the buyer who is looking for an exclusive high-grade vehicle at the right price. Vehicle Dealers in the Pan-American countries will receive our Special Export Price Sheet free by mentioning "The Hub" when they write.

Unusual care is given to boxing for ocean shipment to economize space and secure safe arrival. Prices are quoted on board vessel at export points in our price sheet.

NEW CATALOGUE AND REVISED PRICE LIST FREE

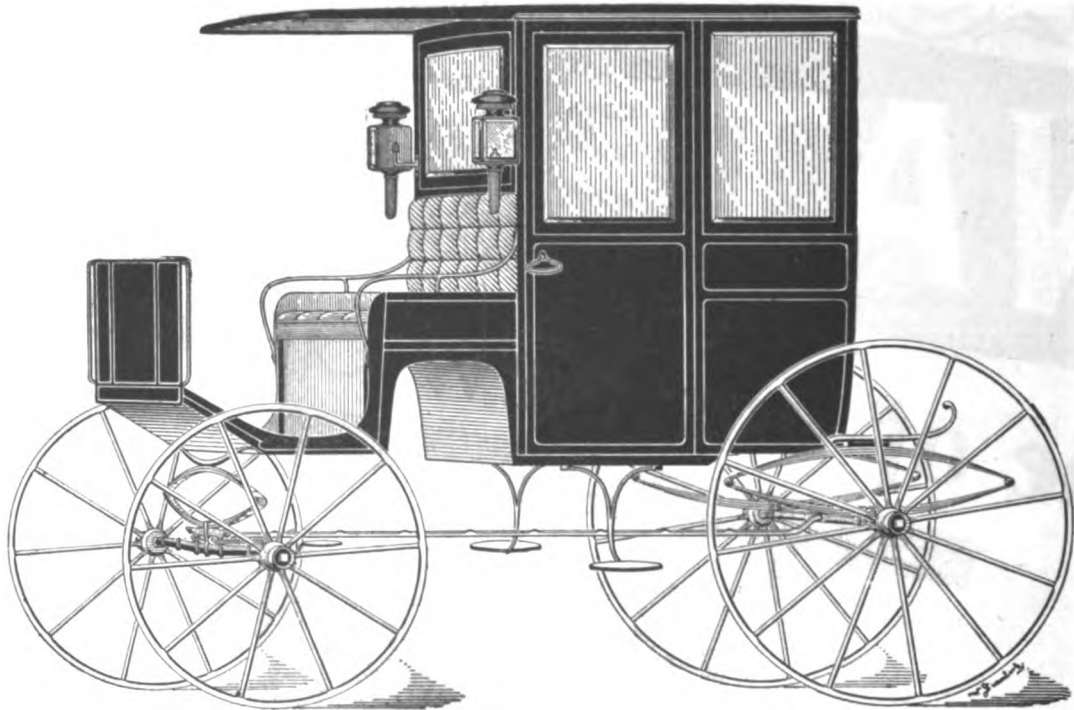
SENeca Co.
WATERLOO
N.Y.

LATE STYLES

FINE FINISH

MILLER BROS.,

HIGH GRADE VEHICLES
IN-THE-WHITE
FOR THE TRADE.



No. 121 DEPOT WAGON.

WRITE FOR CATALOGUE
AND PRICE LIST.

AMESBURY, MASS.

**“Built for
Business.”**

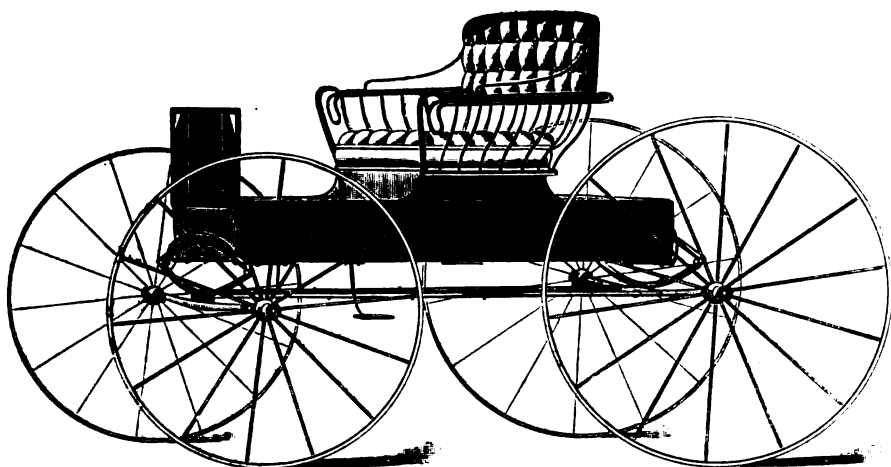
The Lashaway Carriage & Wheel Co.

ARE MAKING AND SELLING A RUNABOUT IN THE WHITE,
AND A BEAUTY.
IT'S RIGHT. WE SAY SO. YOU WILL IF YOU BUY ONE.
WE SELL WHEELS WITH WIRE SPOKES, AND A BRONZE HUB.
WE SELL RUNABOUTS FINISHED. ASK US ABOUT THEM.

The Lashaway Carriage & Wheel Co.,
EAST BROOKFIELD, MASS

E. F. BUNKER,
Manager.

Please mention "The Hub" when you write.

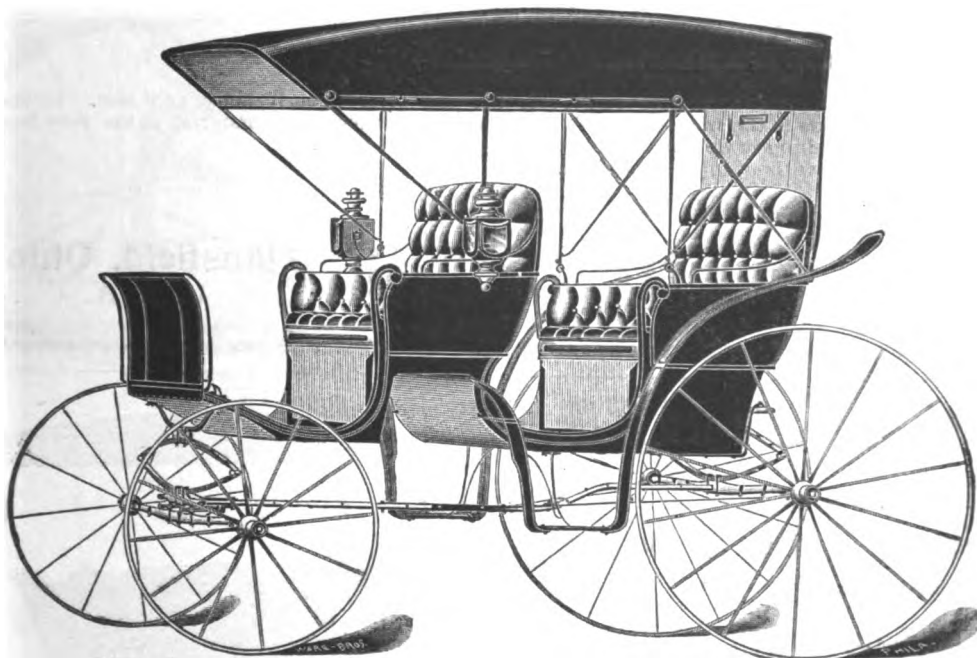


No. 630. RUNABOUT
Naked Axles with solid reach connections. Bailey Fifth Wheel. 22 or 24 inch body. With or without Solid Rubber Tire.

WRITE US FOR COMPLETE CATALOGUE and PRICE-LIST.

SULLIVAN BROS.,
ROCHESTER, N. Y.

"Youngstown" Dealers' Delight.



"YOUNGSTOWN" No. 84, EXTENSION TOP CUT-UNDER SURREY.

No. 84 "Youngstown" not only pleases every individual buyer, but its popularity has become so universal that in many sections it has been styled the "Dealers' Delight."

It is strictly high grade in every detail. Description appears on pages 6 and 7 of our catalogue.

The top is best brand hand buffed leather; leather curtains and leather covered bow sockets.

We would be pleased to quote price and send catalogue to dealers.

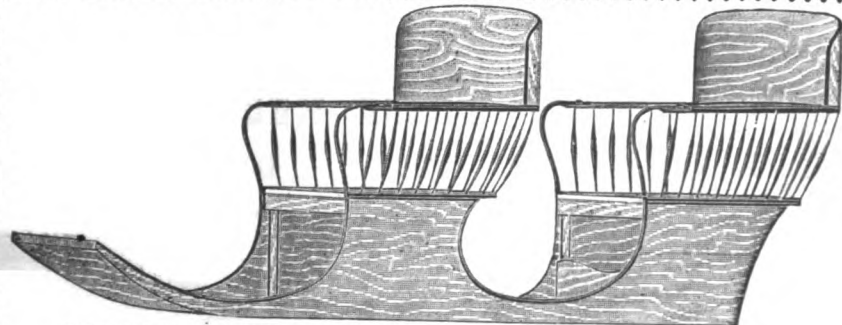
MANUFACTURED BY

THE YOUNGSTOWN GARRIAGE & WAGON CO., YOUNGSTOWN, OHIO.

BODIES

SURREY, TRAP, PHAETON AND BUGGY BODIES.

PANEL, STICK AND WICKER SEATS.

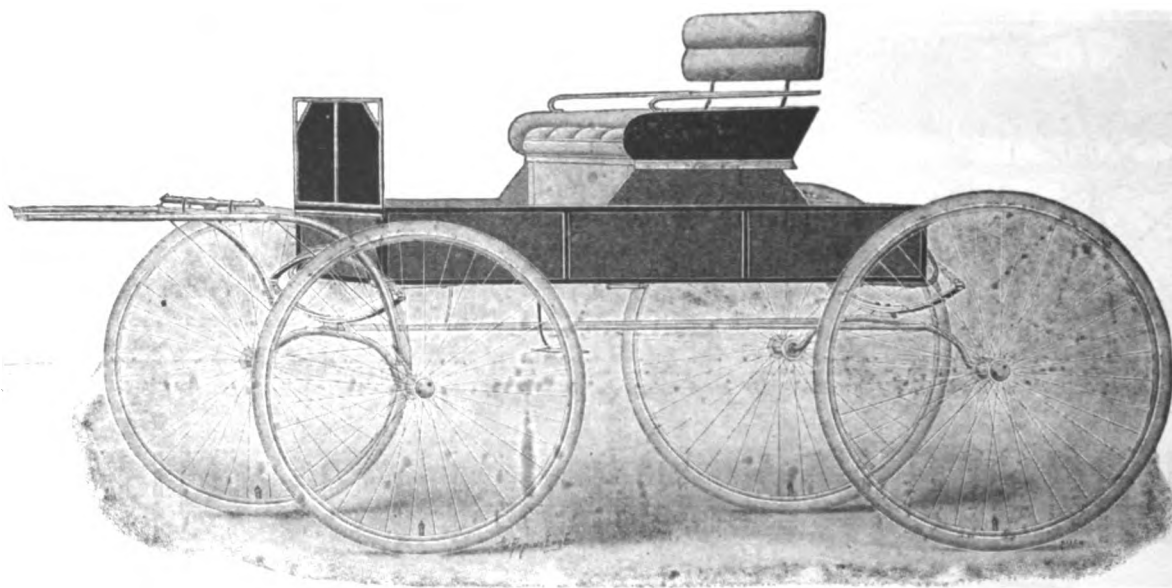


THREE-QUARTER SURREY, 22½ by 63 in., . . . \$9.00.
WE BUILD THE SAME IN CUT-UNDER.

DELIVERY WAGONS BUILT TO YOUR SPECIFICATIONS.

THE MILLCREEK WAGON CO., CINCINNATI, OHIO.

Please mention "The Hub" when you write.

No. 133 RUBINSTEIN.

The
Latest
Idea
In a
Pneumatic
Wagon,
Embracing
The
New
Style
Beverly
Body and
Seat.

No. 133 Rubinstein Wagon.

No. 133 represents the latest idea in a pneumatic wagon, embracing the new style Beverly body and seat. In the manufacture of this wagon we have given attention to the smallest details, not only in the selection of material of the very best quality, but in the rounding out and finishing; making in the end the truly finished piece of work.

This wagon is of the proper proportion and without fault or blemish.

WRITE AND GET FULL DESCRIPTION.

THE RICHLAND VEHICLE CO., Mansfield, Ohio,
U. S. A.

63 BEAUTIFUL STYLES.

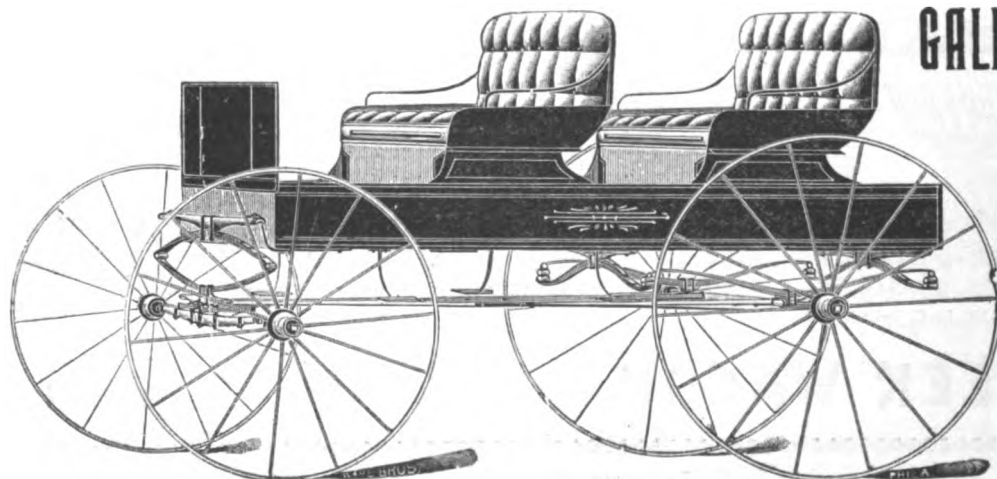
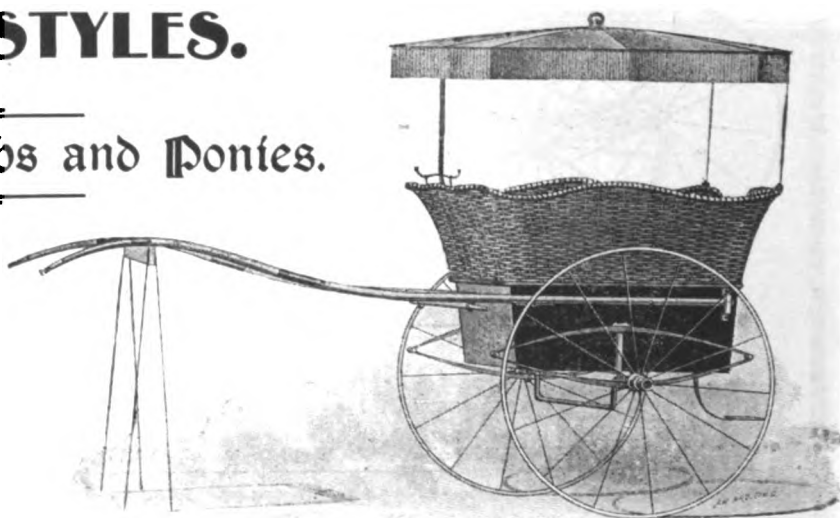
Swell "Rigs" for Swell Cobs and Ponies.

Send for new and beautifully illustrated catalogue No. 14 of up-to-date novelties and quick-selling profit makers. ❖ ❖ ❖

Walborn & Riker,

PRIZE BUILDERS,

St. Paris, Ohio, U. S. A.



GALION WAGON & GEAR CO.

GALION, O.

**MOST COMPLETE
WAGON AND GEAR
FACTORY ON EARTH.**



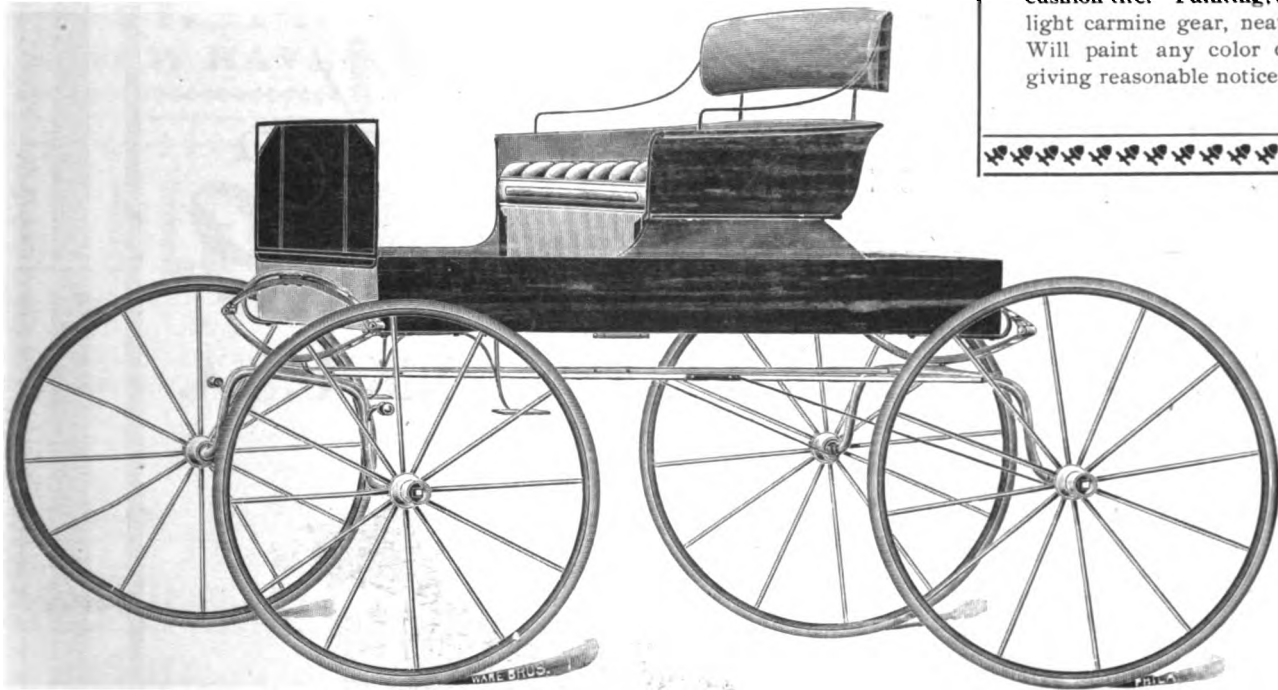
**DID YOU
SEE OUR LINE AT
CINCINNATI?**

Please mention "The Hub" when you write.

THE BEST

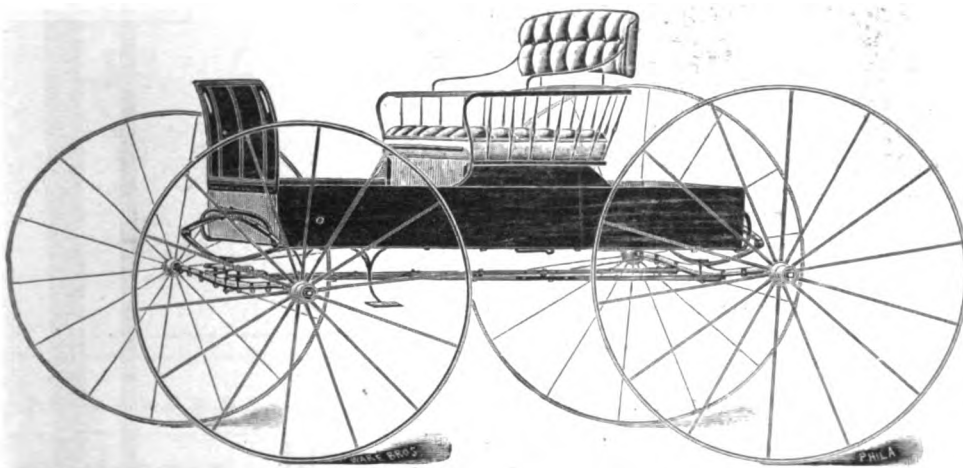
**Good Material and Fine Workman-
ship are what we claim for every
job manufactured by us.** ❀ ❀ ❀

*No Puncture.
Always Ready for Use.*



No. 49. MONTCLAIR RUNABOUT.

Body, 25 x 56 or 22 x 56 inches.
Whipcord trimming. Long distance axles. Easy riding springs.
Wheels, 36 and 38 inches. 1 1/4 inch cushion tire. Painting, black body, light carmine gear, neatly striped. Will paint any color desired by giving reasonable notice.



No. 199. NEW YORK RUNABOUT.

*No. 199, New York Runabout.
Body, 25 x 58 in., long distance axles, rubber head springs and solid rubber tires. Trimmed with fine Whipcord. Painting, black body and carmine gear. Quick shifting shaft shackles. Best runabout made. : : : : : : : : : : :*

SEND FOR CATALOGUE AND PRICE LIST.

Birdsall, Waite & Perry Mfg. Co.,

WHITNEY'S POINT, N. Y.

SHORT & MILBURN, 1665 Broadway, New York, Eastern Sales Agents.

Please mention "The Hub" when you write.



IT DOES ALL A FOUR-WHEELER WILL DO—AND MORE.

But it **CANNOT** be tipped over as a four-wheeler can. It is not a toy or a freak.

It has been used and tested by some of the most conservative drivers of the country, who pronounce it superior to any four-wheeler.



THE LENGERT WAGON CO.

INCORPORATED.
ESTABLISHED 1840.

Sole Manufacturers
THE BLOOMER SAFETY THREE WHEELER,

302-304-306 West 53d St., NEW YORK, U.S.A.



PATENTED IN UNITED STATES, CANADA AND EUROPE.

No. 7. Stanhope.

Ideal vehicle for ladies.

Shortest double hitch of any vehicle in the world.



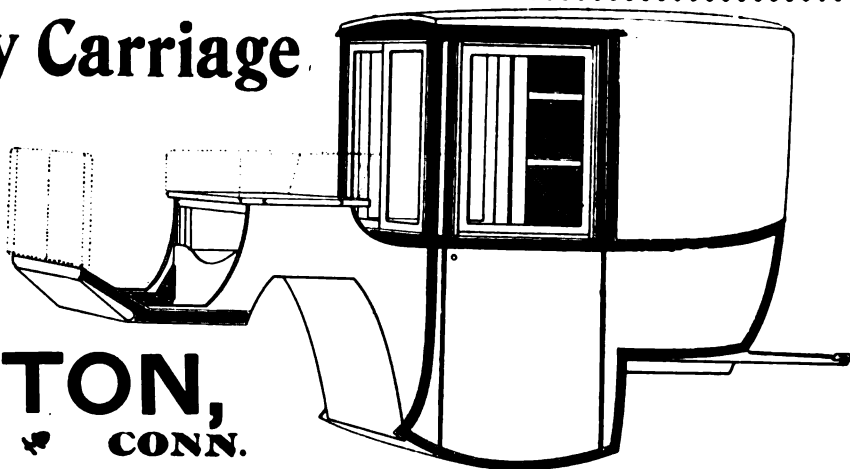
While our single hitch is but 5 inches longer than the closest hitch four-wheeler, our double hitch is from 18 inches to 2 feet shorter than any other vehicle. ◊ ◊ ◊ ◊ ◊ ◊ ◊ ◊



Please mention "The Hub" when you write.

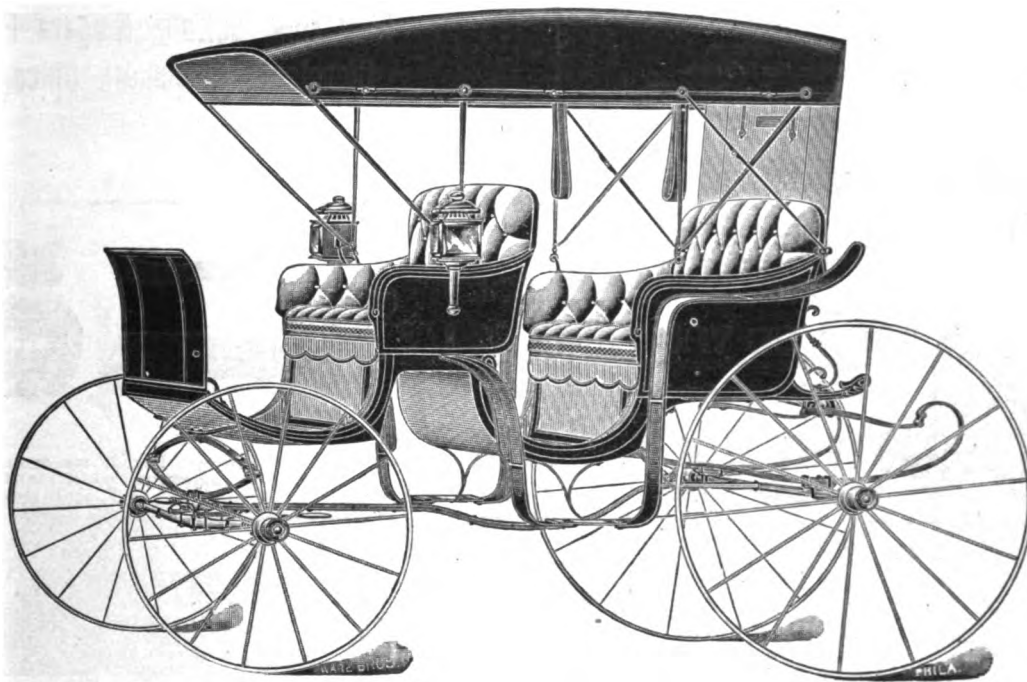
The Place to Buy Carriage
and Automobile
BODIES.

H. A. HORTON,
NEW HAVEN,  **CONN.**



BLEES-McVICKER CARRIAGE CO.,
Manufacturers
of **FINE VEHICLES.**

●
STYLE,
QUALITY,
WORKMAN-
SHIP.
●



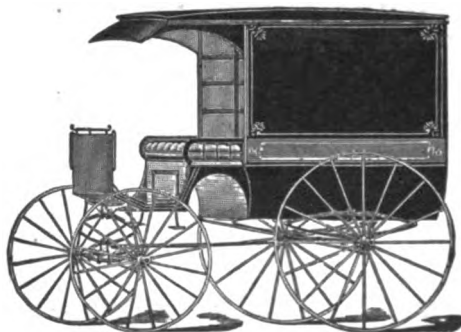
No. 140 CARRIAGE.

●
It Will
Pay You to
Investigate
●
WRITE FOR
CATALOGUE.
●

===== **MAGON, MISSOURI.** =====

Best in the Market ➤

We build
Honest Wagons
at
Honest Prices.



No. 35

The
Quality
of our work is
Guaranteed.

.... WRITE FOR OUR ILLUSTRATED FORM N. CATALOGUE AND PRICE LIST.

THE O. ARMLEDER CO.

Please mention "The Hub" when you write.

Cincinnati, Ohio.



NEW I.D. SEAT.






The New I. D. Seat makes every buggy or sleigh as comfortable for three persons as two, either adult or child. By the use of this seat the third person occupies the same position (over the limbs of the other two), but all the weight and inconvenience is removed from the other occupants. It needs no fastening and fits any vehicle. It does not wear or ruin the cushion, as nothing comes in contact with it but the lower carpet. When not in use it folds and can be put in the box with the curtains.

The intention of the I. D. Seat is not to encourage three riding in a buggy, but to remove the necessity for suffering and inconvenience when necessary for three to occupy seat. All dealers should handle them. Send for Catalogue and Discount Sheet.

Address
"NEW I. D. SEAT CO.,"
 Rohrerstown, Pa.

FOR SALE BY
 B. C. Reinertsen Co., Chicago.
 Baker & Hamilton, San Francisco.
 Anderson Vehicle Co., Fond Du Lac, Wis.
 and Beck & Corbitt Iron Co., St. Louis.

The Picturesque Route



of America
 Between East and West.
 New York, Buffalo, Niagara Falls,
 Cleveland, Cincinnati, Chicago.

WHAT THEY THINK OF IT.....

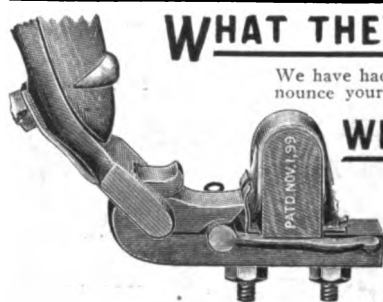
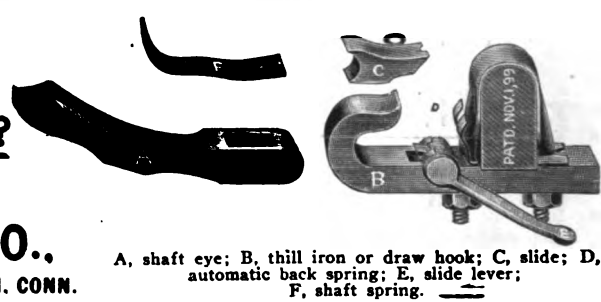
We have had an experience of 18 years in this business, and pronounce your coupling ABSOLUTE. Pou Bros., Columbus, Ga.

WHAT DO YOU THINK OF IT?

Write for Catalogue and Prices.

THE HOLMES MFG. CO.

67-69 COURT STREET. NEW HAVEN, CONN.

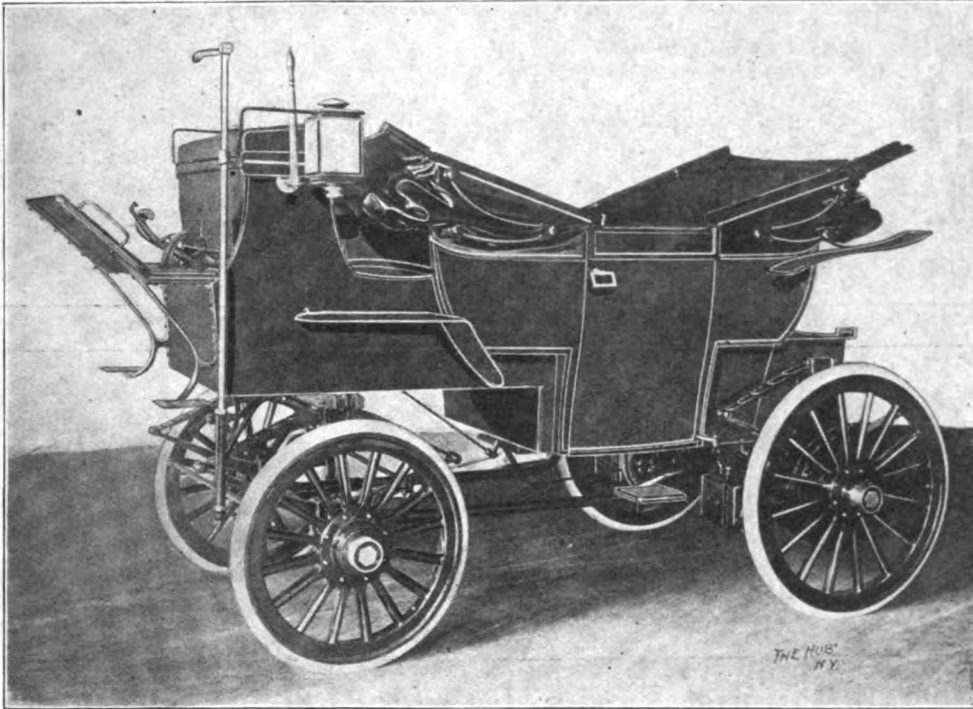



A, shaft eye; B, thill iron or draw hook; C, slide; D, automatic back spring; E, slide lever; F, shaft spring.

Don't you mind if others say
 That advertising doesn't pay.
 Such people surely—there's the rub—
 Have never patronized THE HUB.

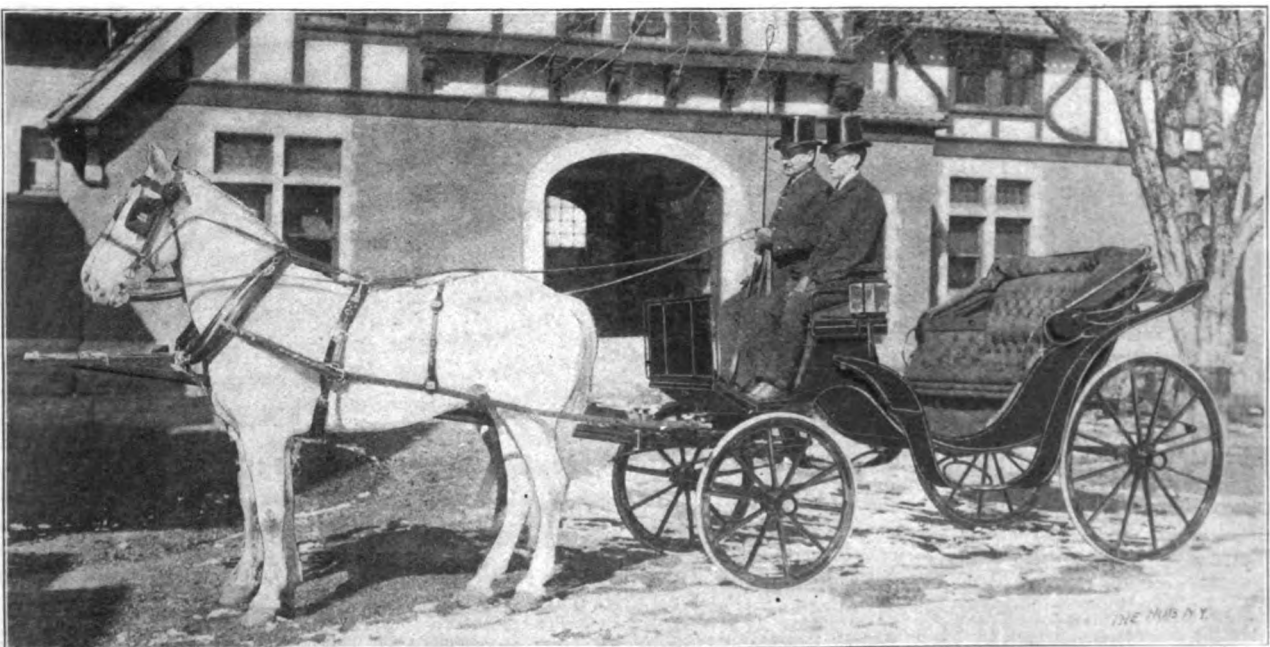
You are reading this ad.
 Why don't you buy this
 space, so others will read
 about your business?

Willoughby-Owen Co.



Manufacturers of

HIGH GRADE WORK.



UTICA, N. Y., U. S. A.

Please mention "The Hub" when you write.

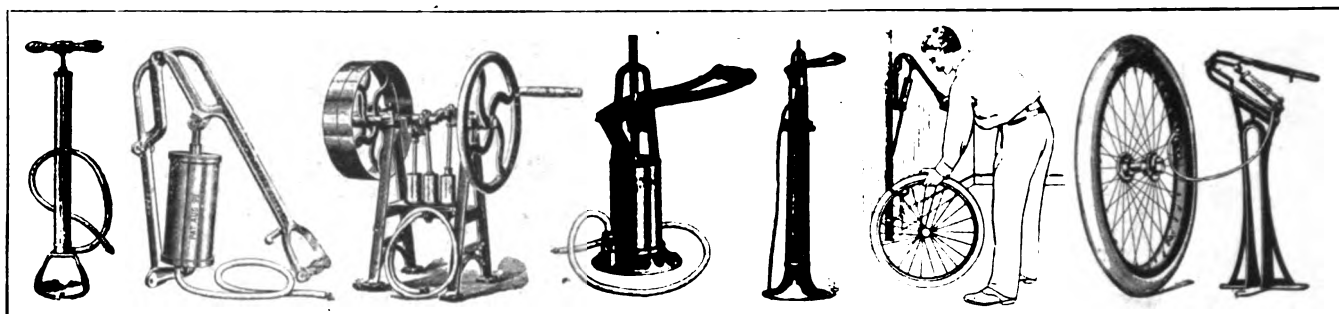
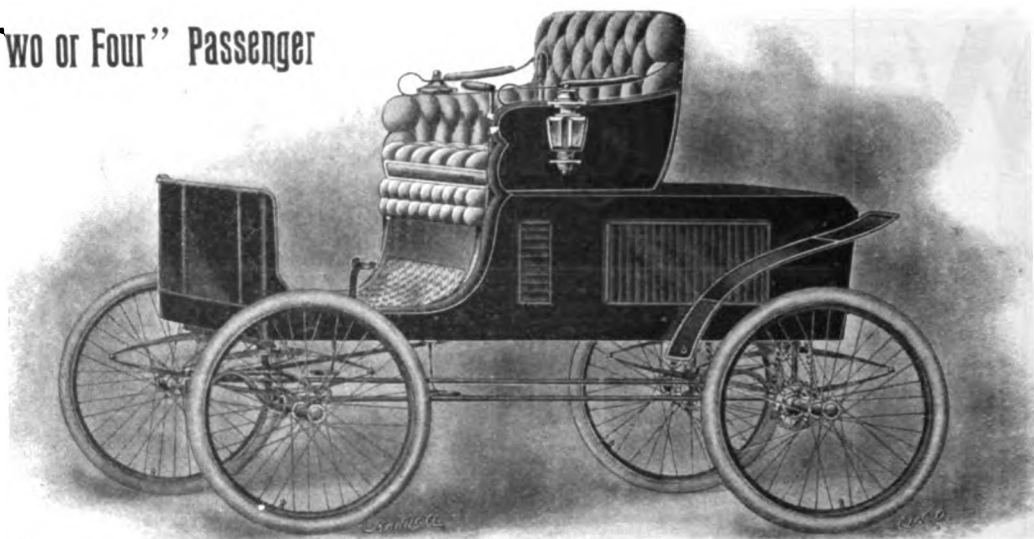
Style No. 4 Combination "Two or Four" Passenger

"Darling" Automobile.

Write for Catalogue,
7 Different Styles.

**The Beardsley &
Hubbs Mfg. Co.,**

MAANSFIELD, OHIO.

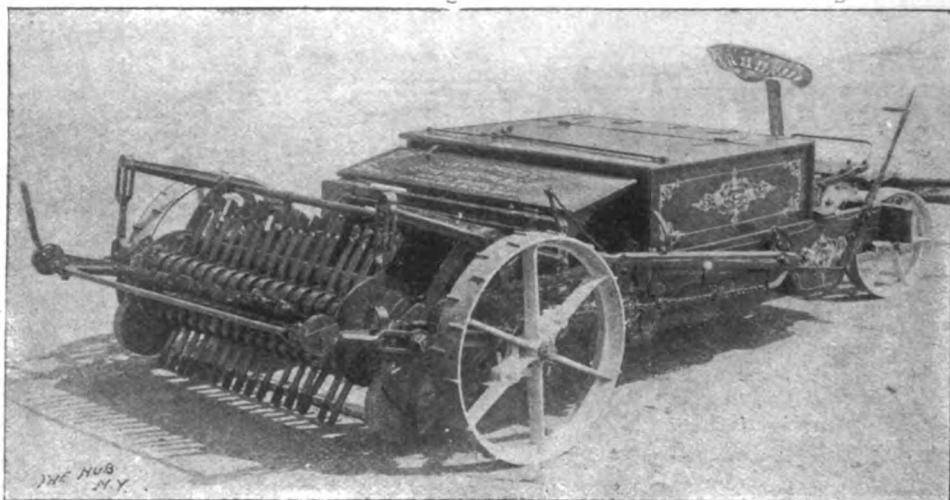


Manufacturers of Air Pumps, Tanks, Gauges, Etc., for Pneumatic Tires.

SEND FOR ILLUSTRATED BOOKLET.

GLEASON-PETERS AIR PUMP CO., 181-189 MERCER STREET, NEW YORK, N. Y.

WEATHERBEE'S STONE GATHERING MACHINE



PATENTED.

**THIS INVENTION WHICH IS HEREWITH ILLUSTRATED, IS A MACHINE FOR GATHERING STONE,
AND CONSISTS OF THE FOLLOWING PARTS:**

FIRST:—An efficient picking device for loosening stones in the surface of the ground, thus facilitating the operation of the gathering device.
SECOND:—A revolving propelling device by which the stones are driven from the ground into a box or receptacle suitably located to receive them, guides being provided to direct the course of the stones to the receptacle.

THIRD:—A mechanism for supporting, adjusting and regulating the propelling device in position, said mechanism being automatic in operation, thus rendering the revolving propeller self-adjusting during operation.

The machine will work on uneven ground. It works well on ground that is sowed and seeded down any time after sowing until the grain is four or five inches high, and does no injury. It is a benefit to grass land, the rake that goes ahead to loosen the stone does the most of the cultivation, but the cylinder does a part, as it is intended to run very close to the ground, there being wheels under each end to adjust it to the uneven surface. These wheels can be raised or lowered, according to condition of ground. The land can be rolled before or after picking stone. It will work on a side hill either going up or down, but draft is less going lengthwise. It is a fine thing for a stony garden. It not only cleans up stone, weeds, etc., but pulverizes the ground and prepares it for seed. It will pick up stone from the size of a butternut to one weighing twenty pounds at the rate of five acres per day on ordinary stony land. The machine can be worked as easily on meadow land as a combined mower and reaper. On plowed land, where hilly, three horses can be used, if necessary. The machine holds from 800 to 1,000 lbs. of stone at a load, gathering this amount in from three to five minutes. After the stones are in the receptacle they can be easily shoveled into a wagon or pile.

Would like to arrange with responsible company to manufacture this machine on a royalty basis, or I would sell patent for a reasonable price

W. R. WEATHERBEE, Richfield Springs, N. Y.

Please mention "The Hub" when you write.



Rochester Steam Carriages

Are a line by themselves, distinctive by being superior to all others in strength and features of utility.

Strictly High Grade.

Simple, Practical, Durable.
Strong and Handsome.

No torches used in lighting, use simply a match, fire regulated from driver's seat. Pilot Light, Double Acting Brake, Auxiliary Pump, the Engine pumps both air and water, Throttle spring lock, Water column, Carriage locks with key, Double Mirror, Dunlop Tires, &c.

" ROCHESTER RUNABOUT.

Good Agents Wanted, write for particulars.

Rochester Cycle Mfg. Co., Rochester, N. Y.

THE HERALD SQUARE Automobile Exchange,

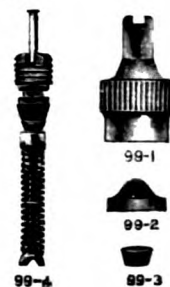
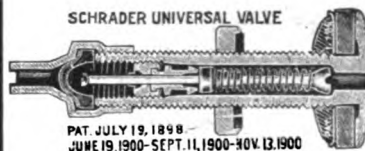
147-157 West 35th St.,
NEW YORK.

Space offered and facilities provided for storage and care.
Workrooms and offices at low rates.
Salesrooms.
Auto's Charged, Repaired, Stored.
Cleaned.
Supplies in stock.

INSPECTION SOLICITED.

SCHRADER UNIVERSAL VALVE

Trade Mark Registered April 30, 1898.



NOTICE

Manufacturers, Jobbers and Dealers :

In order to facilitate the obtaining of
PARTS OF THE SCHRADER UNIVERSAL VALVE,

I have concluded to sell parts only to the general trade.
Parts 99-1, 99-2, 99-3, 99-4, may be had from all tiremakers,
or from A. SCHRADER'S SON.

Price-list of parts sent on application.

SIMPLE AND ABSOLUTELY AIR TIGHT.

MANUFACTURED BY

A. SCHRADER'S SON,

Established 1844.

30 and 32 Rose Street,

NEW YORK, U. S. A.



OUR UP-TO-DATE

Surrey.

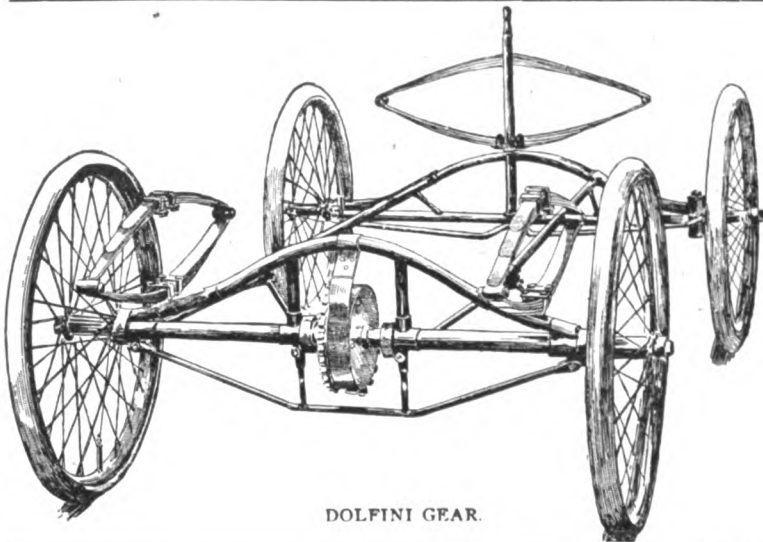
Will track ordinary County roads. Gasoline tank holds 10 gallons, sufficient for 100 miles of travel, 12 to 18 mile speed.

Superb Hill climber.

Patent Pilot Light.

Forward and backward brakes.

Milwaukee Automobile Co.



DOLFINI GEAR.

Complete Running Gears and Fittings.

SPECIALLY ADAPTED TO THE USE OF CARRIAGE MANUFACTURERS, IN GASOLINE, STEAM OR ELECTRIC VEHICLES

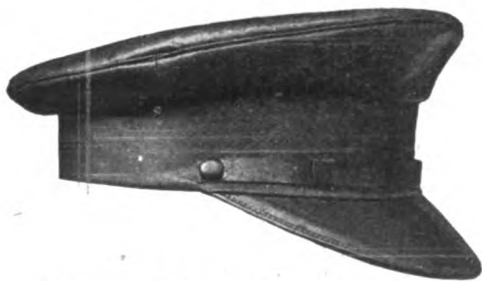
ONLY ONE GRADE..... **THE BEST.**

Brooklyn Automobile Supply Co.,

332 CLASSON AVENUE,

BROOKLYN, N. Y.

AUTOMOBILE CAPS For Ladies and Gentlemen....



Chauffeur's Cap of Dull Finish Kid.

LATEST STYLES.
BEST OF MATERIAL.
COMPLETE LINE.

DEMMEERLE & CO.,

248 W. 23d St., New York City.

Automobile Gasoline Motors.



Bicycles.

Also Motors for Bicycles
and Launches.

Castings and Working Drawings.

Lowell Model Co.,

P. O. BOX 292,

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CREST MANUFACTURING CO

THE NAME "CREST" IS A GUARANTEE.



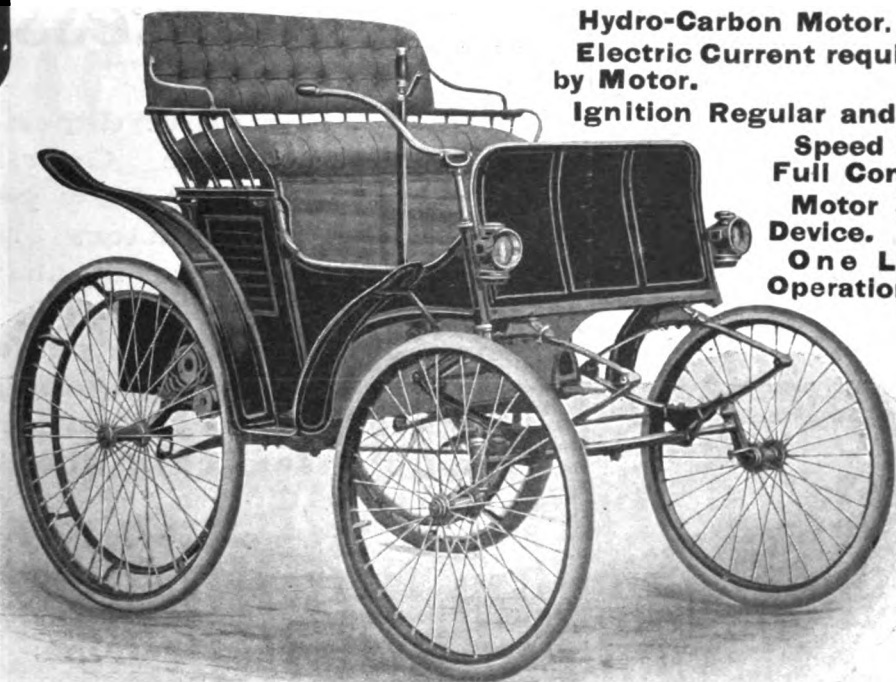
CAMBRIDGEPORT, MASS.

**CREST GASOLINE
MOTORS,
CREST
SPARKING PLUGS**

EVERYTHING
FOR AN

AUTOMOBILE.

OAKMAN MOTOR VEHICLE.



Hydro-Carbon Motor.
Electric Current required for Ignition provided
by Motor.

Ignition Regular and reliable.

Speed at Will of Operator and under
Full Control.

Motor Started from Seat by Simple
Device.

One Lever Controls every Required
Operation except Steering.

Cost of Operating Less
than One-Quarter Cent
per Mile.

Free from Odor.

Practically Noiseless.

Very Attractive.

Simple in Construction
and Durable.

Weight 475 Pounds.

Style No. 120.

AMERICAN VEHICLE CO., MANUFACTURERS.
45 BROADWAY, NEW YORK.

The Billings & Spencer Co.,

Hartford, Conn., U.S.A.
Established in 1869.

Manufacturers of
Drop Hammers, Presses, Forges, Machinists' Tools and Drop Forgings

of every description and for all purposes. The illustrations show
Automobile Forgings suitable for carriages weighing from 600 to 1500 lbs. which
we carry in stock.

We have ample facilities for the production of
Vehicle Forgings of every description.

Specifications will receive our prompt and careful attention.

Estimates made on finished parts.

LONDON OFFICE:

No. 8 Long Lane, Aldersgate St.,
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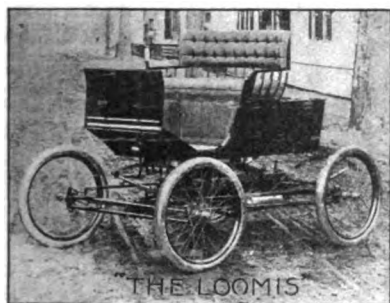
Steering Knuckle, 1-3 size.

DROP FORGED OF BEST SOFT STEEL

ORDERS PROMPTLY FILLED.



Front Axle
End,
1-3 size.



"THE LOOMIS"

THE best all around road wagon made. No water
aboard. Weight, 590 pounds. Five horse
power, or one horse power for every 120 pounds.
Immediate delivery.

Write for catalogues of model No. 1 and No. 3.

WE ARE LOOKING FOR A FEW MORE GOOD AGENTS.

Loomis Automobile Co.
Westfield, Mass.



The Success

of an Automobile depends largely on the Gearing used. No matter how perfect and satisfactory the other parts of a machine may be, if the Gearing is not mechanically perfect and of the proper design your machine will not give you the service it should. Nuttall Cut or Planed Gears are accurate, correct in design and practically noiseless. Prices from Blue Prints or Specifications.

R. D. NUTTALL CO.

Pittsburg, Pa.

RAW HIDE GEARS

NOISELESS
DURABLE
CLEANLY
NO VIBRATION



Our gears are used for all kinds of geared machinery. They are especially adapted

FOR THE AUTOMOBILE SERVICE


and have been adopted by a majority of the leading concerns in this line. Write for our circular.

THE
New Process Raw Hide Co.

SYRACUSE, N. Y.

The Oldsmobile.



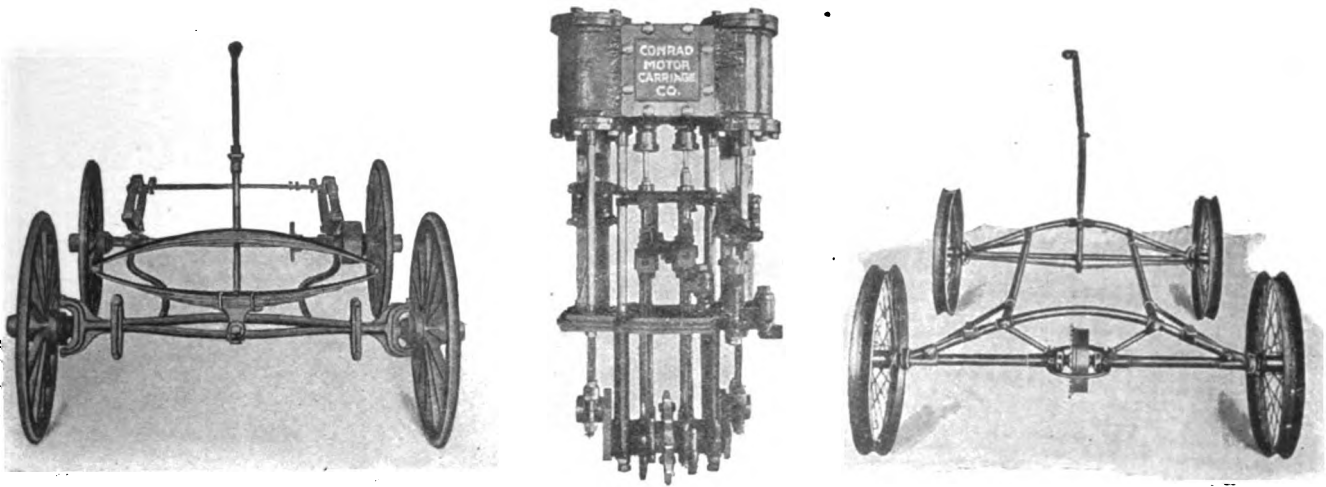
It's a marvel to most people. Runs 40 miles on one gallon of gasoline. Starts from will from seat. Can be operated by the inexperienced. Fully guaranteed. 

Write for our Catalog.

Olds Motor Works,

53 Concord Ave.,

DETROIT, MICH.



AUTOMOBILE

Engines, Boilers, Running Gears, Differentials,
Running Gear Frame Fittings, Rough or Machined.

STEAM DELIVERY WAGONS.

STEAM STANHOPE.  

STEAM RUNABOUTS.  

Carriage Builders, build your own Automobiles. We can furnish you the parts, together with blue prints, and all necessary data, for piping up and assembling your first jobs.

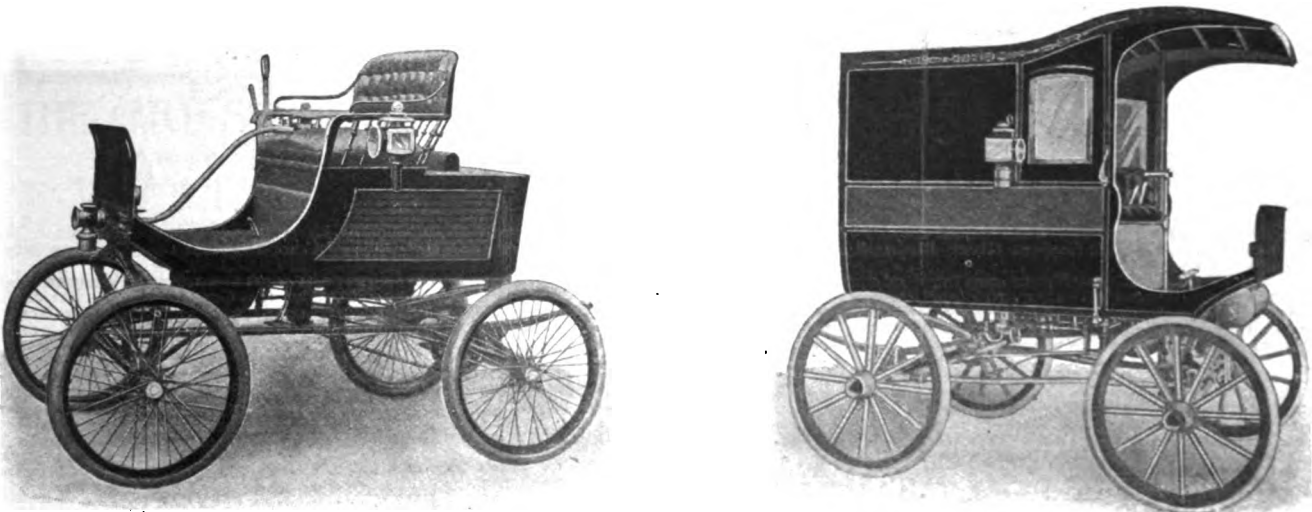
Our Steam Carriages are running successfully, and have all the latest improvements.

Catalogue on application.

THE CONRAD MOTOR CARRIAGE CO.,

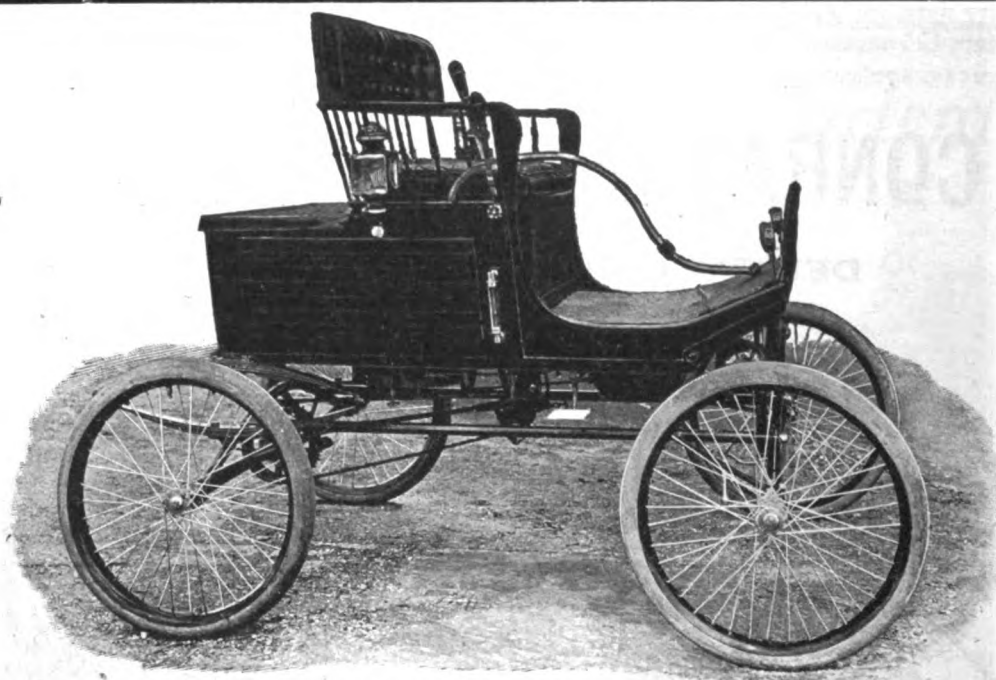
DEWITT AND BRADLEY STREETS,

BUFFALO, N. Y.



Please mention "The Hub" when you write.

The Mobile.



In recognition of the importance of the industry established by The "Mobile" Company of America at Kingsland-Point-on-the-Hudson, the New York Central & Hudson River Railroad has established a station at the factory of The "Mobile" Company with a service of twenty-five trains a day.

The original Philipse Manor, two hundred and twenty years old, still stands on the company's property, and the railroad company has appropriately, in view of its historical and literary associations, given this name to the station. The run from the Grand Central Station in New York is one hour. The manor house and old mill and Sleepy Hollow are part of the company's property, connected by the Headless Horseman's Bridge. The old Dutch Church, and Washington Irving's grave and the monument marking the spot where André was captured, are in the immediate vicinity. When you visit New York, you will find a trip to the factory of

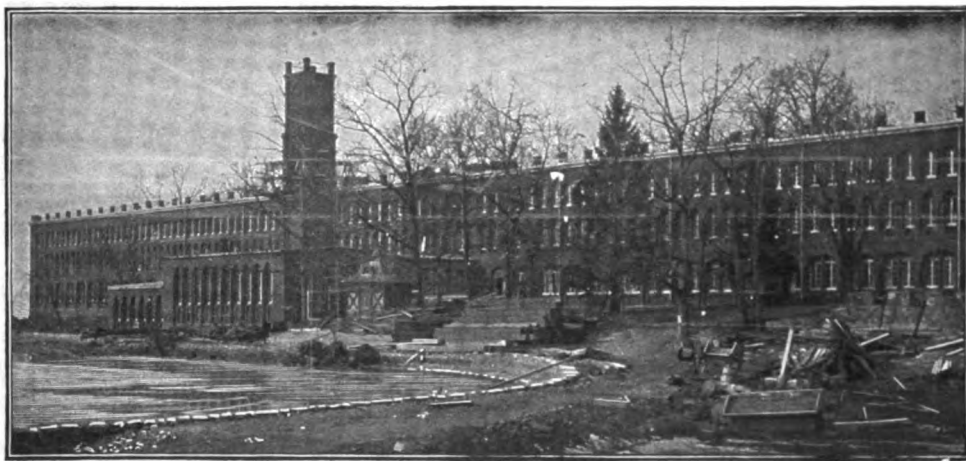
THE "MOBILE" COMPANY OF AMERICA

quite worth a half day's outing. Kingsland Point itself is considered to be the most beautiful section of the Hudson. The visitor is looked after by The "Mobile" Company's corps of demonstrators, taken for a ride in a horseless carriage, and shown all the different processes which enter into the fifteen departments required to manufacture a horseless carriage. He may inspect both quality of material and workmanship, see the new carriages tested as they are taken from the works one after another, and have every opportunity to satisfy himself of the excellence of the carriage in every particular. **Price, \$750 Complete.**

THE "MOBILE" COMPANY OF AMERICA, Philipse Manor Station, Tarrytown, N. Y.

Please mention "The Hub" when you write.

The Mobile.



FACTORY OF THE MOBILE COMPANY OF AMERICA. VIEW LOOKING SOUTH.

THE "MOBILE" A CARRIAGE FOR EVERY-DAY USE.

ON June 10th, four "Mobiles" started in the middle of the afternoon from the factory of The Mobile Company of America at Kingsland-Point-on-the-Hudson and ran to West Point, reaching the ferry at Garrisons in time for the 5:15 boat. Two hours and a half were spent in running about the Military Academy roads, then, after dinner, the four carriages started home by moonlight. The road from Kingsland Point to West Point is hilly, with many steep gradients scattered over its length; but from the State Camp at Peekskill through the Highlands of the Hudson to West Point occur long climbs and very steep and rough roads. The distance traveled was approximately, including the running at the Academy grounds, sixty-five miles. Not a delay or accident of any kind occurred; not a moment's worry to anyone of the eight people who made the journey. The "Mobiles" were in as good condition at the end as at the start—not one, but the entire four—and one of them had come up from New York to Kingsland Point before starting for West Point.

This gives an idea of what the "Mobile" is—a splendid piece of machinery, satisfactory in all its parts, of the best quality and workmanship throughout. Price, \$750. All visitors can inspect every department of the manufacture of "Mobiles." Twenty-five trains stop at Philipse Manor, the station on the company's grounds.

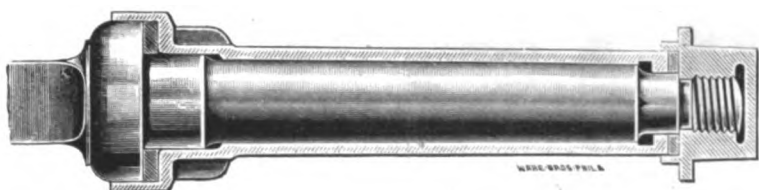
For information regarding "Mobiles" address

THE "MOBILE" COMPANY OF AMERICA,

PHILIPSE MANOR STATION, TARRYTOWN-ON-THE HUDSON, N. Y.

Doctors' Special Axle.

*This is the finest Axle on the market
for light and medium weight Carriages.*



*In it there is more value for
the money than in any other
at any price. Full particu-
lars sent on application. **

*To it, when desired, we can at a small extra cost apply the Brewer
Longitudinal Axle Lubricator, which is the simplest device known for
continual lubrication, and has the added merit of not weakening either
arm or box by the removal of metal at vital points and does not
allow oil to leak out. * * **

Dalzell Axle Co., South Egremont,
Mass.

Grout Bros. Automobile Co.

Have vehicles running in nearly every part
of the world, to which they can refer.



They make every part in their own factory,
and challenge the world for a steam road vehicle as
to hill climbing, speed, ease of management, work-
manship and durability.

Call and allow them to demonstrate this, or
send for particulars.

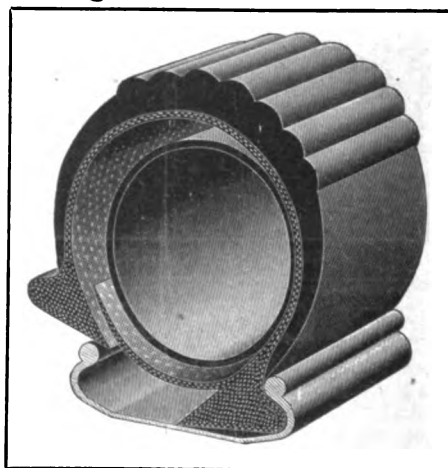
Grout Bros. Automobile Co.,

ORANGE, MASS., U. S. A.

(AT PAN-AMERICAN EXPOSITION.)

G & J TIRES

FOR AUTOMOBILES



*Are detachable,
double tube tires.
An occasional
puncture is inevi-
table in any tire.
Any one can
repair a G & J
Automobile Tire
easily and
permanently.*

**G & J
TIRE CO.**

INDIANAPOLIS, IND.

Please mention "The Hub" when you write.

THIS IS THE WAGON

**That Ran 100 Miles at
an Average Speed of
9.4 Miles an Hour.** —



NOT ON PAPER

but in the 100 mile endurance test of the Long Island Automobile Club. The Daimler was the only delivery wagon entered in the contest, perhaps because it is the only one built that could finish.

YOU NEED THIS KIND IN YOUR BUSINESS

Daimler Manufacturing Co.,

939 Steinway Avenue,

LONG ISLAND CITY, N. Y.

Please mention "The Hub" when you write.



The

Century

Chainless

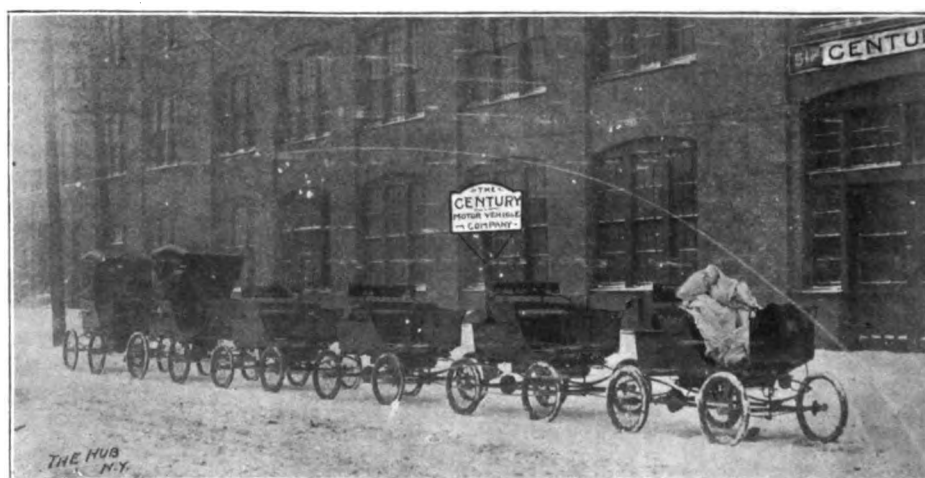
**ELECTRIC
STEAM
GASOLINE**

**2 PASSENGER
4 PASSENGER
LIGHT DELIVERY**



**ALL MACHINERY ENCLOSED. ONE HAND
CONTROL. GEAR TRANSMISSION.**

We can't tell you all about it here. You had better write us. We usually have a few carriages used for demonstrating, which can be sold at reduced prices.



This photograph of one shipment will help to explain why we could not spare a line of carriages to show at the Pan-American. OUR CUSTOMERS ARE GETTING THEM.

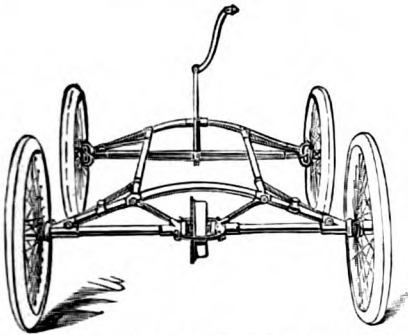
CENTURY MOTOR VEHICLE CO.,

SYRACUSE, N. Y., U. S. A.



Please mention "The Hub" when you write.

Automobile Running Gears.



We make a specialty of gears suitable for Gas, Steam or Electric power. Our gears have been in use with good results to buyers. They are adapted for all classes of road work without straining.

Side or Centre Steering.

SIMPLICITY, SPEED, SERVICE.

READING AUTOMOBILE & GEAR CO.,

10th and Exeter Streets.

READING, PA.

The Real Thing



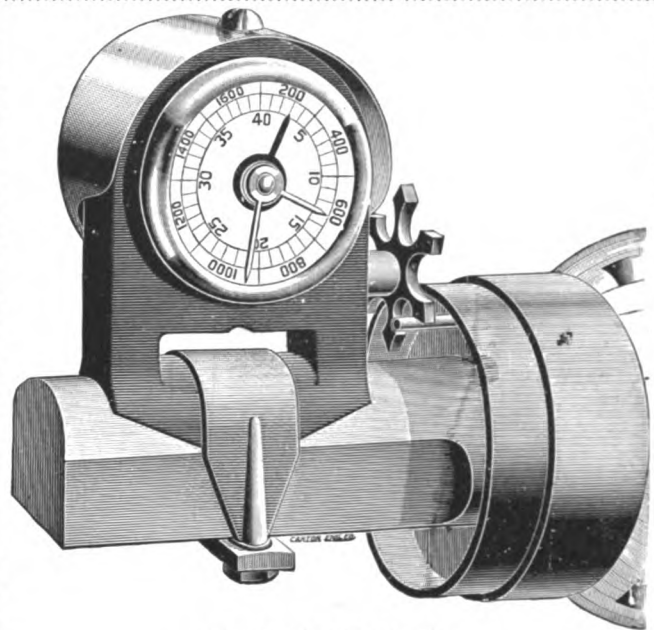
Col. Sellers accounted for his candle being in the cook stove with this remark: "I find, sar, that apparent heat is as good as actual heat, sar."

That is, the sense of sight deceived all the others.

It is just possible that the eye may deceive you at the Automobile purchase. Have a care. Get the real thing. Delight the senses with an Orient Runabout.

Waltham Mfg. Co.,

WALTHAM, MASS.



THE IMPROVED

BELL ODOMETER

attached to your automobile or carriage, will give you the exact distance traveled, and announces each mile passed by the stroke of a bell.

Send for circular H.

S. H. DAVIS & CO.,

Cor. Portland & Sudbury Sts.,

BOSTON, MASS.



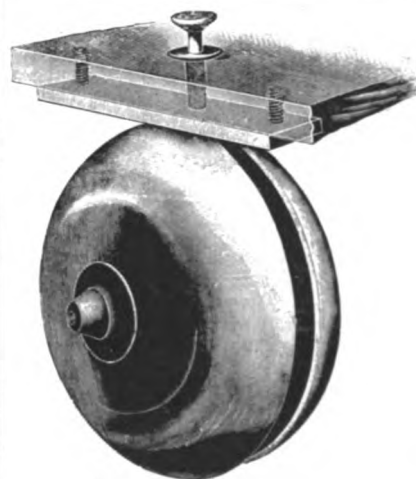
PLEASE NOTE PLUNGER EXTENSION.
IT PREVENTS PLUNGER FROM BECOMING DISPLACED.
PATENT APPLIED FOR.

BELLS

of all sizes
for . . .

**Motor Carriages,
Buggies, Etc.**

Bevin Bros. Mfg. Co.,
East Hampton,
Conn.



Automobile Bell

For musical tone, simplicity and durability it has no equal on the market. It can be easily applied to any thickness required.

SEND FOR SAMPLE
AND PRICES.

**The East Hampton
Bell Co.,**

East Hampton,
Conn.

Please mention "The Hub" when you write.

We make a specialty of American vehicles for foreign countries, and will be pleased to send our catalogue "L" and price list to carriage builders in any part of the world.

This catalogue is printed in English, French, Spanish and German, and illustrates and describes our goods comprehensively, giving tables of weights, estimated transportation charges to the various seaports, etc.

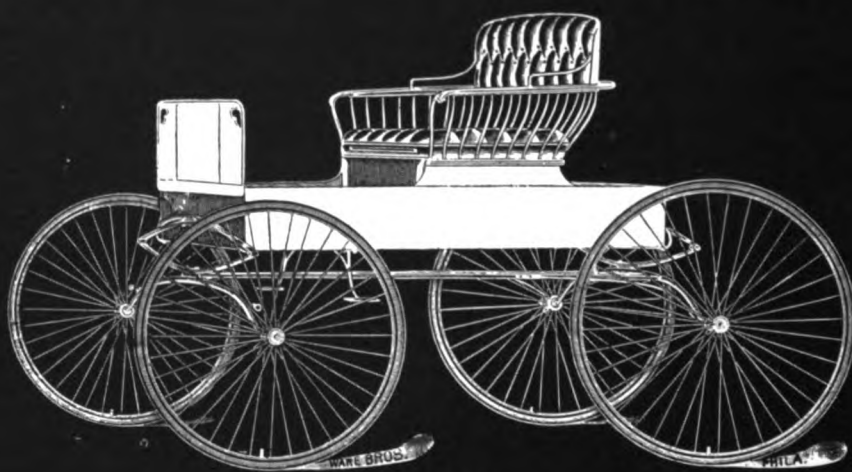
WE SOLICIT CORRESPONDENCE.

Maison de confiance pour voitures américaines, spécialement construites pour l'exportation. Notre catalogue descriptif "L" avec prix-courant est à la disposition de MM. les fabricants de voitures du monde entier.

Ce catalogue illustré, imprimé en français, anglais, allemand et espagnol, contient en dehors d'une description détaillée de nos marchandises, des renseignements sur les poids et le coût approximatif de transportation d'ici aux ports principaux de l'univers.

Prière de nous honorer de votre correspondance.

THE BUFFALO "BIKE" WAGON



No. 400

THE BUFFALO SPRING & GEAR CO.
BUFFALO, N. Y., U. S. A.

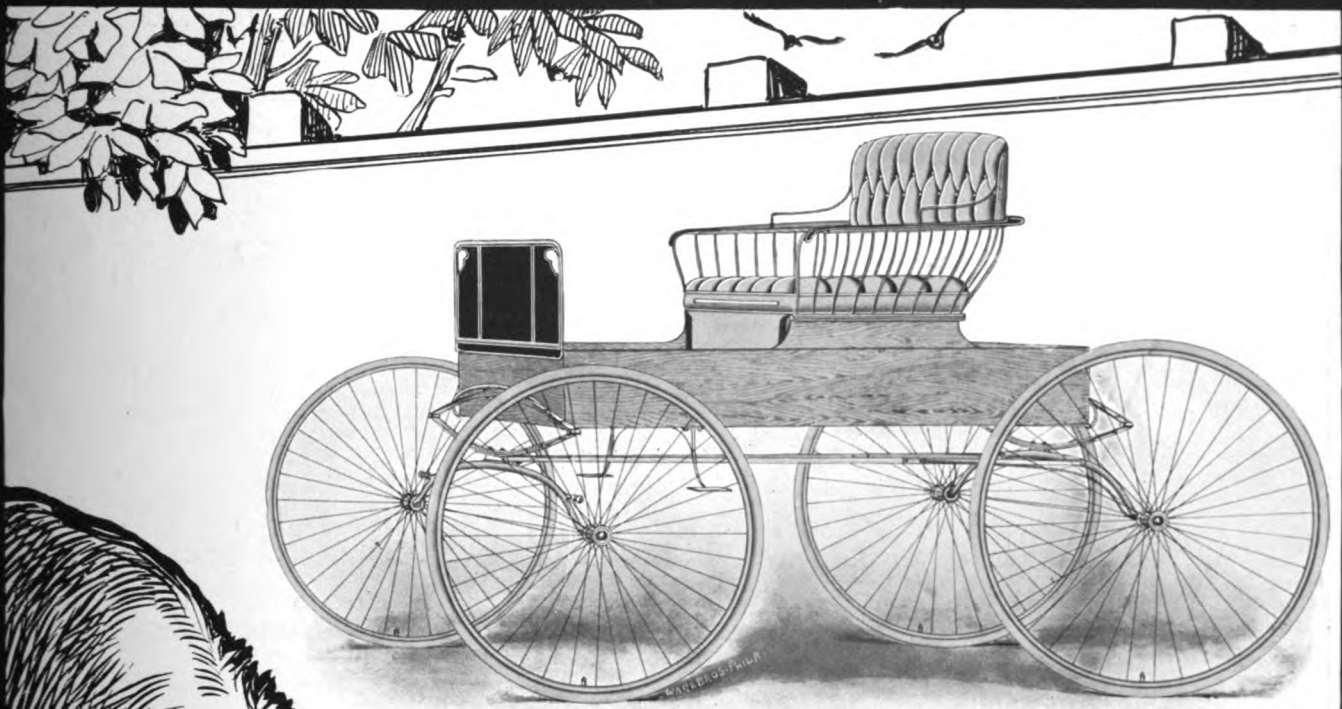
Wir sind Spezial-Fabrikanten amerikanischer Wagen für Export, und stellen hiermit unsern Katalog "L," nebst Preis-Liste, jedem Wagenbauer der Welt zur Verfügung.

Dieser illustrierte Katalog ist in Deutsch, Englisch, Französisch und Spanisch gedruckt, und enthält nebst ausführlicher Beschreibung unserer Waaren, Tabellen der Gewichte und ungefähren Transportkosten nach den wichtigsten Einfuhrhäfen.

Correspondenz erbeten.

Vehículos americanos para la exportación es nuestra especialidad y mucho estimaremos enviar nuestro catálogo "L" con su respectiva lista de precios á los señores fabricantes de carruajes en cualquier parte del mundo. Supliremos este catálogo en Inglés, Francés, Español y Alemán. Tiene ilustraciones y descripciones de nuestros vehículos de una manera comprensiva, como también tabla de los pesos y de los cargos de trasportación á los varios puertos de mar, etc.

Solicitamos correspondencia.



THE BUFFALO BIKE.

(IN THE WHITE.)



*A Money Maker for
the Trade.*

CATALOGUE FREE.



THE  BUFFALO SPRING & GEAR CO.
BUFFALO, N. Y.

Bailey

Pneumatic

Whalebone

Roadwagon



AT no time has there been any question of their marked superiority to all would-be competitors for favor. Even those seeking to supplant us in public estimation have uniformly conceded their superiority—not more than by the words “as good as,” it may be—but the concession is given.

You may learn more about them by corresponding with

S. R. Bailey & Co. (Established 1856.) Amesbury, Mass., U.S.A.

Shaft Shackles Simple and Sure

BAILEY

BULL-DOG

Shaft Shackles.

S. R. Bailey & Co. Established 1856. Amesbury, Mass.



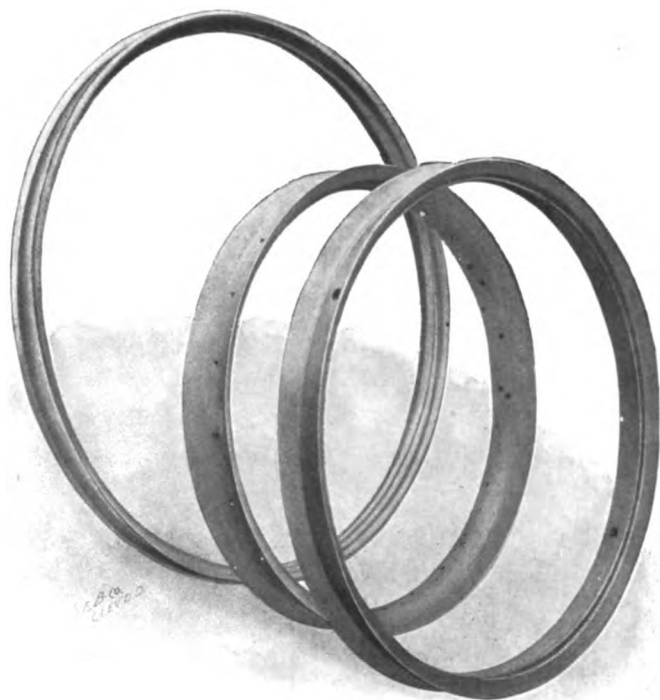
**BAILEY
BEAUTY**

**Bailey's Pneumatic Whalebone
Roadwagons**

**are in truth the most excellent examples
of modern stability and beauty.**

S. R. Bailey & Co. Established 1856. Amesbury, Mass.

STEEL RIMS



CRESCENT AND DROP CENTER PATTERNS.

Sizes—From $1\frac{1}{4}$ inches up to 4 inches in section ;
from 28 inches to 5 feet in diameter.

WE ALSO MANUFACTURE

SHEET STEEL MUDGUARDS.

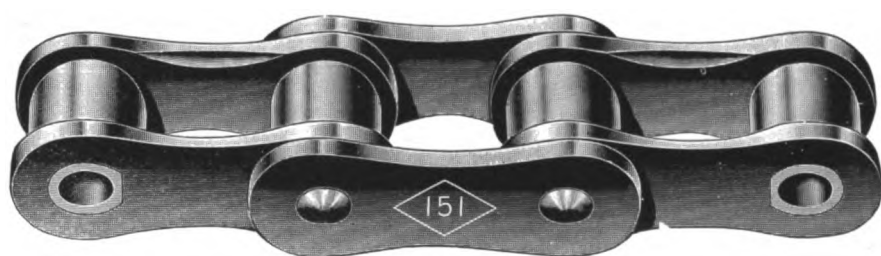
Blue prints on application.

Vehicle cups for ball bearings, taking from $\frac{3}{8}$ inch
to $\frac{3}{4}$ inch balls.

For further information apply to

The Automobile and Cycle Parts Co.
SMITH STAMPINGS FACTORY,
Milwaukee, Wis.

AUTOMOBILE CHAINS.



No. 151 "Diamond" Automobile Chain.

Pitch, $1\frac{1}{2}$ inches ; width, $\frac{1}{2}$ inch ; diameter of rollers, $\frac{5}{8}$ inch ; thickness of sides, .125

This pattern has polished straw tempered hard rollers, hard steel bushings (**not split**), hard rivets, full polished blue 8 sides "chanfered." Its tensile strength is 6,500 pounds.

We have been making chains, and nothing else, for nine years. Our factory is exclusively equipped for chain manufacture. It is the largest chain plant in the world.

The characteristic qualities of "Diamond" Chains are **accuracy, strength, uniformity and finish.** Prices on application.

THE AUTOMOBILE AND CYCLE PARTS CO.
DIAMOND CHAIN FACTORY

INDIANAPOLIS, IND.



Tool Steel Balls.

We have the largest and best equipped plant in the world devoted to the manufacture of hardened and polished tool steel balls. The steel used is made expressly for us and is the result of a long and exhaustive series of experiments which have resulted in producing a uniformity of hardness, toughness and wearing qualities never before attained.

Our regular stock line consists of Tool Steel Balls in sizes from $\frac{1}{16}$ " to 4" in diameter. We can grind balls to any of the intermediate sizes at special prices which will be promptly quoted upon application. Can also furnish balls in Bessemer steel, brass, bell metal, etc.

The Automobile and Cycle Parts Co.,
CLEVELAND BALL AND PEDAL FACTORY.

CLEVELAND, OHIO.



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The Hub

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No. 2

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THE HUB is published monthly in the interests of employers and workmen connected with the manufacture of Carriages, Wagons, Sleighs, Automobiles and the Accessory trades, and also to the interests of Dealers.

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ENGLAND.—R. Applegarth, 11 Queen Victoria street, London, England. Subscription price, 12s. 6d., or \$3.00.

FRANCE.—L. Dupont, publisher of *Le Guide du Carrossier*, 135 Boulevard Haussmann, Paris. Subscription price, 15 francs, postpaid.

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Our Export Trade.

THE wonderful increase in the export from the United States has caused far more commotion throughout industrial Europe than did the discovery during the Spanish war that America was one of the world's greatest nations. Our manufactured products have found markets in fair competition with those of other countries, and how to meet this new competition is a vital question with many foreign governments. Some advocate a tariff; others pass special laws whereby American products are barred through some subterfuge; others propose subsidizing factories, as has been the case in Hungary, where shoe factories are subsidized in order to meet the prices of American products. The cause for all this is easily found, first in the qualities of our products and secondly our prices, which are lower than those asked for like qualities of goods by other nations. If this result had been reached by reducing wages we would be the losers rather than the gainers by the changed conditions, but the facts are the wages of American mechanics are much more than double those paid in other countries; that is, when we speak of wages to individual workers, nowhere else in the world are they so well paid, but when we speak

of the wages as they compare with the cost of the product we find that the labor cost here is less than in most countries. This is due to our greatly improved factory conditions and the introduction of labor saving machinery, by the use of which the productive power of every worker is greatly increased, while labor is lightened. The foolish combinations against the employment of machinery, by which the productive power of the machine is decreased one-half to one-third, finds no encouragement among American workmen, and the man who gets the most out of a machine gains proportionately in his earnings. If the working forces of Europe should withdraw their opposition to machinery and follow the American plan of getting the full productive power therefrom they might check the inflow of American products, as the wages abroad cannot be brought up to what they are here. As this is not likely to occur, we may reasonably expect a continued increasing demand for American products throughout the world despite legislative action on the part of other countries, which is almost sure to occur. Austria is now moving in that direction, and as the existing treaties with the United States expire in 1902, our trade with Austria-Hungary will without doubt encounter a much heavier tariff than that now existing. The American consul at Trieste, Frederick W. Hossfeld, under date of February 15, 1901, calls attention to the position of Austria, which we publish this month. The few countries that do not threaten legislative action are as much aroused as are those that do. It is only a few days since a member of the British Chamber of Commerce, London, Eng., said: "Americans were not satisfied with their successful tariff policy, but had devised a new scheme which was intended to oust even the Germans, and leave America the purveyor of the world. He thought that the danger for England was that that country would be swamped by the surplus production of American trusts." That such results should have been accomplished in a few years is gratifying and should lead to further action. We do not favor reprisals, as they must eventually react upon the nation instituting them; but we do favor legislation that will encourage American shipping and place our immense carrying trade in the hands of our own people and place freight rates at a figure that will enable us to meet whatever adverse conditions may be imposed. Our success in manufactured goods has been due to the quality and character of our products, and just in proportion as we are able to improve upon the past will our trade increase. The battle is a royal one, and it will end in the "survival of the fittest."



No Decrease in Fine Carriages.

THE statement has been made repeatedly that there has been a decline in the manufacture of fine carriages in the United States and in other carriage building countries. We are not prepared to say how it is elsewhere, as there is no way of obtaining the desired information, but a contemporary attempts to prove it by showing a falling off in the number of houses that exhibited their vehicles at the recent World's Fair, holding the exhibit of twenty from England as proof, when it is a well-known fact that the two houses which showed the pleasure carriages were not ranked as first-class twenty-five years ago, but have come to the front since that time, while none of those that held the foremost position have gone out of business or lost their position as first-class builders; and yet none of them made exhibits, although

doing a greater business than they did a quarter of a century ago, and as for the United States, there was but one exhibitor, and that one a builder of high grade but not first-class work. We can, however, speak for our own country, as we have been directly or indirectly connected with the industry in one or another capacity for fifty-three years, and we assert without the fear of contradiction that more first-class carriages were built in the United States in the year 1900 than ever before in any one year of the history of our people; and further, that the number of "high grade" carriages built during the same year exceeded by 75 per cent. at least the product for the same period of time a quarter of a century ago; and furthermore, that the "high grade" carriage of to-day is a better vehicle than was the "first-class" vehicle of twenty-five years ago. One large first-class house of to-day turns out more carriages in numbers per year than were turned out by three of the best, in the same length of time, twenty-five years ago, while there are others who double the number of those days. But we cannot stop here. The quality of carriages has been elevated. No house could hold the position of "first class" if its product was no better now than that of the "first class" of twenty-five years ago. No matter how good they were then, they are better now in every particular, except perhaps in wearing qualities, which are as pronouncedly good now as they were then, while the finish far excels. The improvements which tend to the betterment of the vehicle are counted by the score. Styles as a whole are better, proportions nearer perfect, and the variety greatly increased. We have lost the "drumming" Brougham and coach, the rattling window doors and shafts. Rubber tires and packing have almost eliminated noise, and the series of minor troubles overcome. In all these respects the "first class" has made its progress and kept its place. Behind it comes a class of "high grade" vehicles with all the improvements in style, finish, variety and quality that would entitle them to rank as "first class" had that class not advanced, and nowhere in the world are our first and high grade carriages excelled. The common carriage of a quarter of a century ago was but little better than the cheap carriage of to-day, while the cheap vehicle of the past was inferior in all but wearing qualities to the lowest grade of the present. We can recall the time when there were scores of shops which a first-class workman would shun, and if by chance he was compelled to work therein for a time, he would be ashamed to acknowledge it when asking for work elsewhere, and there were localities, the very name of which on a carriage would condemn it in the eyes of buyers. The lowest-priced carriages of to-day have but little to recommend them, but it is through those of like character of years past that the carriage industry has grown to what it now is. Like all pioneer products, it was commonplace and cheap in price, but the buyer was taught by it the advantages of the carriage, and he bought a better grade just so soon as he was able to pay for it. By doing that manufacturers were taught to advance quality, and sharp competition made improvements necessary, and gradually the quality advanced. This advance forced the medium builder to take advanced steps, and he crowded hard upon the heels of the first grade, notwithstanding the wonderful advance made by the leading builders. And because of this—we repeat our assertion—there never was a time when there were so many first class carriages made, or in use, as there is now, not only in actual numbers, but in proportion to the population. There are cities in this country to-day where hundreds of first-class carriages are used, and in which the street urchin could point out all of that class a few years ago. We are thus emphatic in our declarations because of the injury that can be done to our home and foreign trade by the statement by parties who are looked upon as authorities that the American carriage is inferior to what it was. And we can readily see how such a statement will be made use of to the injury of the American manufacturer, and the assertion that there is a falling off in the production of fine carriages bespeaks an unjustifiable ignorance of the extent and condition of the carriage trade of the United States. Our position is fully sustained by an interview published in the *New York Herald*, on April 21st, with Daniel T. Wilson, published elsewhere in this month's *HUB*.

The Second Annual Speedway Parade.

THE New York Road Driving Association have selected May 11 as the day for holding their second annual speedway parade. Few thought when the speedway was planned that it would do what it has for light driving, and that it has done so much is proof positive that the apparent loss of interest in the roadster was but the result of the lack of proper place where the animal could be speeded without danger to life or limb and where legal protection was provided against encroachments of any kind. No more popular scheme was ever devised and no more enthusiastic reception was even given. The parade of last year was a surprise to the projectors as well as to onlookers and the everyday sport on the speedway during the driving season afforded amusement to thousands in addition to the owners of the turnouts. There is every reason to believe that this season's parade will greatly exceed that of last year and there will be a gathering of light driving horses, trotters and pacers such as was never before seen. The opening of the speedway not only augmented the value of light road horses, but it opened up a new field for the carriage builder and resulted in bringing out numerous designs of speeding wagons of novel construction and of special merit, the demand for which has not been confined to New York, but has spread to all parts of the country. It is estimated that fully two thousand of these light vehicles, weighing from seventy to ninety pounds, were sold last year, and all engaged in their manufacture report a large demand for the coming season. As speedways are being devised for other cities the demand for these speedway wagons will increase for years to come. The one danger that hovers over the sport is the persistent efforts of owners of automobiles to obtain the right to run their machines on the speedways. Should they be successful in their efforts, good bye to speedways. It appears unaccountable that any class of men should be so supremely selfish as to wish to gratify their own feelings by overriding the rights of others, and it is to be hoped that the automobile clubs' actions and public opinion will be such as to make the running of automobiles on such special drives as speedways for horses impossible. Should the automobile develop, as its friends anticipate, special courses can be provided where they, too, can be speeded to the utmost limit without danger to the public. THE HUB would hail with pleasure the building of such a course just so soon as the number of motor vehicles owned by private gentlemen warrant its construction.



Freight Rates.

ON another page we publish the report of the freight committees of the C. B. N. A. and the Cincinnati C. M. Club, in which attention is called to the incongruities of the railroad freight rates as established by the official classification committee, a classification that works hardship to the carriage shippers, and one that they have been vainly trying to correct for two years past. The shipping charges have become such an important factor, with wholesale manufacturers, that they must have the very lowest obtainable. They are willing to let live as well as live, but the railroads seem to act upon the idea that the shippers are asking far more than they are entitled to, and that, having the shippers in the press, they mean to squeeze them to the utmost. The injustice of the classification and its incongruities are plainly set forth by the committees, and should be read carefully by all interested in the manufacture or sale of carriages, and they should make it their individual business to aid the committees of their trade associations in their efforts to obtain equitable and just classifications. The carriage makers are not making an unjust request, and there can be no possible excuse for the present unfair rates. To the wholesale manufacturer it is much to have a uniform and reasonable classification in order that they may conduct their business with safety. The hundreds of thousands of vehicles shipped each year entitles the shippers to fair treatment, and it can be obtained if every man connected with the industry does his duty by entering his protest against the unfair classification mentioned by the committees.

Description of Latest Styles.

CONCORD DRIVING WAGON.

Scale, $\frac{1}{2}$ in. to the foot.

(See Fashion Plate No. 504.)

FASHION plate No. 504 illustrates a little vehicle that makes a most convenient, inexpensive and easy riding wagon for summer use in the country. The hamper is secured by straps, can be removed and the space utilized for light baggage. The Concord gear, as is well known, is a very serviceable and easy riding gear.

Dimensions of Woodwork.—Width across, outside, 30 in. Width of seat across top, outside, 39 in.; across bottom, 36 in. Wheels, wood hubs. Height, front, 40 in.; rear, 44 in. Hubs, length, diameter, 6 in.; at centre, $3\frac{3}{4}$ in.; front end, $2\frac{3}{4}$ in.; back end, $3\frac{1}{8}$ in. Size of spokes, $1\frac{1}{8}$ in. Number of spokes, 14 and 14. Stagger, $\frac{3}{8}$ in. Depth of rims, 1 5-16 in. Tread of rims, 1 3-16 in. Depth of bands, front, $2\frac{1}{2}$ in.; back, $\frac{3}{4}$ in. Distance between centre of axles, 52 in.

Dimensions of Ironwork.—Side springs, 48 in. long between centres of heads, with $2\frac{1}{2}$ in. set on main leaf. Width of steel, $1\frac{3}{8}$ in. Number of plates, 4. Thickness, No. 3 steel. Axles, $1\frac{1}{8}$ in. Tires, $1\frac{1}{4}$ in. by $\frac{1}{4}$ in. Fifth wheel, 12 in. diam. Track, outside, 4 ft. 6 in.

Painting.—Body, panels of seat dark and body red; all frame work black. Gear, red; all ironwork except springs black. Trimming, gray whipcord; back and seats plain; cushions, squabbed. Finish, rails, black.

STANHOPE PHAETON.

Scale, $\frac{1}{2}$ in. to the ft.

(See Fashion Plate No. 505.)

FASHION plate No. 505 shows a Stanhope Phaeton constructed on the latest lines. The body lines are straight, the Stanhope pillar being very nearly plumb. The noticeable feature is the very heavy gear. This vehicle is a cut between the usual driving Stanhope and a semi-mail phaeton, the gear in this instance being a perch gear, but the heavy platform gear may be used if desired. One or two leading houses have brought out Stanhopes of this style this season.

Dimensions of Woodwork.—Body, width across top of pillar, outside, 46 in.; across bottom, 32 in. Width of body, across top, 31 in.; across bottom, 30 in. Turnunder, 7 in. Wheels, wood hub. Height, front, 34 in.; rear, 44 in. Hubs, length, 7 in.; diam. at centre, $4\frac{3}{4}$ and 5 in.; front end, $3\frac{3}{4}$ in.; back end, 4 in. Size of spokes, $1\frac{3}{8}$ in. Number of spokes, 12 and 14. Stagger, $\frac{3}{8}$ in. Depth of rims, $1\frac{3}{8}$ in. Tread of rims, $1\frac{1}{4}$ in. Depth of bands, front, $2\frac{1}{2}$ in.; back, $\frac{7}{8}$ in. Distance between centre of axles, 48 in.

Dimensions of Ironwork.—Springs, front, 35 in. long between centres of heads, with 9 in. opening on main leaf. Width of steel, $1\frac{3}{8}$ in. Number of plates, 5. Thickness, No. 3 steel; back, 35 in. long, with 9 in. opening on main leaf. Width of steel, $1\frac{3}{8}$ in. Number of plates, 4. Thickness, No. 3 steel. Axles, $1\frac{1}{4}$ in. Tires, $1\frac{1}{4}$ in. by 5-16 in. Fifth wheel, 12 in. diam. Track, outside; rear, 4 ft. 8 in.

Painting.—Body, panels very dark green; Stanhope pillar and seat black. Gear, red; ironwork, black; no striping, except a wide stripe on the face of the rims and two stripes around the hubs. Trimming, Bedford cord, wide. Finish, silver.

DRIVING PHAETON.

Scale, $\frac{1}{2}$ in. to the ft.

(See Fashion Plate No. 506.)

FASHION plate No. 506 illustrates a somewhat novel design of driving phaeton. In the construction of the body the back quarter panels flare outward on concave lines, the curve beginning six inches above the bottom line.

Dimensions of Woodwork.—Body, width across top, outside, at highest point of seat, 44 in.; across bottom, 28 in. Wheels, wood hubs. Height, front, 34 in.; rear, 42 in. Hubs, length, $6\frac{1}{2}$ in. diam.; at centre, 4 in.; front end, $2\frac{3}{4}$ in.; back end, $3\frac{1}{8}$ in. Size of spokes, $1\frac{3}{8}$ in. Number of spokes, 12 and 14. Stagger, $\frac{3}{8}$ in. Depth of rims, 1 5-16 in. Tread of rims, 1 3-16 in. Depth of bands, front, $2\frac{1}{2}$ in.; back, $\frac{7}{8}$ in. Distance between centre of axles, 61 in.

Dimensions of Ironwork.—Springs, front, 35 in. long between centre of heads, with 7 in. opening on main leaf. Width of steel, $1\frac{3}{8}$ in. Number of plates, 4. Thickness Nos. 3, 3, 3 and 4 steel; rear, 35 in. long, with 7 in. set on main leaf. Number of plates, 5. Thickness, Nos. 3, 3, 3, 4, 4 steel. Axles, $1\frac{1}{8}$ in. Tires, $1\frac{1}{4}$ in. by $\frac{1}{4}$ in. Fifth wheel, 14 in. diam. Track, outside, 4 ft. 8 in.

Painting.—Body, black; moldings, edged with carmine, medallion; at back seat, carmine. Gear, carmine striped with black. Trimming, maroon cloth; seal quarters; backs and dickey seat made up plain; cushions, squabbed. Finish, all rails black.

LIGHT PARCEL DELIVERY WAGON.

Scale, $\frac{1}{2}$ in. to the ft.

(See Fashion Plate No. 507.)

THE many modifications of forms of business wagons, particularly for light parcel delivery purposes, leaves a broad range for the wagon maker. The one illustrated by Fashion Plate No. 507 is made up on straight lines with the main panel molded to appear like the express wagon moldings, but divided in squares instead of oblongs. The gear is made up strong with rear bounds. The whole being strong and serviceable.

Dimensions of Woodwork.—Body, width across, outside, 3 ft. 8 in.; length, over all, 7 ft. 6 in. Wheels, wood hubs. Height, front, 36 in.; rear, 50 in. Hubs, length, $7\frac{1}{2}$ in.; diam., at centre, $4\frac{3}{4}$ in.; front end, $5\frac{1}{4}$ in.; back end, 4 and $4\frac{1}{2}$ in. Size of spokes, $1\frac{1}{2}$ and $1\frac{5}{8}$ in. Number of spokes, 12 and 14. Depth of rims, 1 9-16 in. Tread of rims, $1\frac{3}{8}$ in. Depth of bands, front, $2\frac{1}{2}$ in.; back $\frac{7}{8}$ in. Distance between centre of axles, 58 in.

Dimensions of Ironwork.—Springs, front, 35 in. long between centres of heads, with 8 in. opening on main leaf. Width of steel, $1\frac{1}{2}$ in. Number of plates, 5. Thickness, Nos., main, No. 2, rest No. 3 steel; back, 36 in. long, with 8 in. opening on main leaf. Width of steel, 8 in. Number of plates, 4. Thickness, Nos., main No. 2, rest No. 3 steel. Axles, front, $1\frac{1}{4}$ in.; rear, $1\frac{3}{8}$ in. Tires, $1\frac{3}{8}$ in. by 7-16 in. Fifth wheel, 14 in. diam. Track, outside, 4 ft. 8 in.

Painting.—Body, the lower part or ribbed section of body, panel and under side opening, dash and toe, red; belt panel, pea green; upper panel, sulphur yellow. Rear, to correspond; the champfers, black. Gear, sulphur yellow, striped with a heavy line of black. Trimming, plain leather cushion; rubber heel pad tacked to lining board; leather curtain rolled up on the inside.

THE GOVERNESS CART.

(See "Latest Styles.")

PLATE CXXX. illustrates a new departure from the old style governess cart manufactured by J. T. Clarkson & Co., Amesbury, Mass. The sides are curved and upholstered, making it both roomy and comfortable. The shafts are hung with a new style spring which eliminates all horse motion. These carts are finished in mahogany stain or painted to suit the taste of the buyer. This company have brought out many good things, and in this cart they fully sustain their reputation.

PNEUMATIC BUCKBOARD.

(See "Latest Styles.")

PLATE CXXXI. shows a pneumatic buckboard built by the Cortland Cart & Carriage Co., Sidney, N. Y., together with horse and rider, giving a good idea of the capacity and appearance of the turn-out. This carriage has high arch ball bearing axles, 34 and 36 inch wheels, $2\frac{1}{4}$ inch tires. The trimming is whipcord. Painting, body black, gear carmine.

OPERA 'BUS.

(See "Latest Styles.")

PLATE CXXXII. illustrates an opera 'bus and team, the 'bus being built by Willoughby, Owen Co., of Utica, N. Y. The style of this 'bus will commend it to buyers of this class of vehicles, being stylish, roomy and of superior construction.

RUNABOUT.

(See "Latest Styles.")

PLATE CXXXIII. shows an elliptic spring runabout built by the New York Wagon Gear Company, of York, Pa., who furnish this vehicle in the white. The axles are 15/16 x 6½ in. double collar steel. This is an up-to-date vehicle, one that commends itself to the trade.

NO. 133 RUBINSTEIN WAGON

(See "Latest Styles.")

PLATE CXXXIV. illustrates No. 133 Rubinstein wagon, built by the Richland Vehicle Co., of Mansfield, O. The feature of this is the Beverly body, hung off on pneumatic gear. The details are all well shown, and as the construction is high grade the vehicle is well suited to the fine custom trade.

EXTENSION TOP PHAETON.

(See "Latest Styles.")

PLATE CXXXV. illustrates a very desirable vehicle, built by Keaton & Wells, Cortland, N. Y. The many new features of this job will appeal strongly to the buyer, being novel, practical, sensible and up to date. The side surface of the body is convex-concave. It has both spring cushion and back, which is curved at the ends, making a very comfortable and graceful seat. The gear is fitted with Richard's long distance axles; Bradley shackles; wrought Bailey hangers; full bright, open head oil tempered springs, with Brewster fifth wheel. Norway iron connections, rubber pad steps and roller rub irons. Painting: Body and risers, black; seat, any color desired, with moulding black; shaded body, with black stripe if desired. Gear, red, brewster green, bronze green, London smoke or ultra marine blue. Trimming: Novelty whipcord or blue cloth. Carpet to match. Five bar covered dash; seat fenders with drop handles, leather covered, with twisted effect. Silver plated lamps.

SIRIAR GIG AND PONY.

(See "Latest Styles.")

PLATE CXXXVI. is a reproduction from the *Coach Builders' and Wheelwrights' Art Journal*, London, Eng. This pony and gig, the property of James Read, Esq., Perth, has carried off numerous prizes at English shows. The following description is given by the London *Journal*:

The sizes of body are: Length of bottom-side, 17 in.; length of bracket, 11 in.; depth of boot of body, 11 in.; length of body on seat line, 17 in.; width of seat, 18 in.; depth of top of boot, 4 in.; depth of quarters, 11 in.; width of body on bottom-side, 30 in.; across top of boot, 33 inches; width across seat, over all, 38 inches; across top of quarter in front, 40 in.; width of body at back on elbow line, 37 in.; on bottom, 34½ in.

The boot, which is solid sided, is framed with the bracket bottom-side by half checking and rebate, the back and top of the boot-side is framed with cross bars, which are half checked and screwed into the side, the bottom recess and top narrow back quarter are panelled over.

The seat quarters are solid sided and the mouldings planted on, the back panel being pinned to the end frame of the sides and covered over with moulding, planted on, and the various parts strengthened with light corner plates. In such a curve as an *Ogee*, there must be

a center batten to help the panel to keep its form. In a high class piece of work the body would be framed throughout, as in a Victoria or sociable, and the mouldings worked up in the solid, but such are the demands as to price with many builders that the cheapest way combined with the strongest are the chief objects sought in production, and to such, the solid sided method is the best and simplest.

Height of wheels, 4 ft. 2 in.; 1½ in. spokes with buffer tires, if with iron tires the felloes should be bent rims with 1¼ in. by ½ in. tire; length of hubs, 8½ in. diameter, as per Warner patent standard: but if of English make, 6½ in. diameter will be found ample if of sound and dry wych elm.

Length of front half of spring, 24 in.; length of hind half, 21 in.; height of Cee, 19 in.; length of coupling straps, 6 in.; width of spring, 13¼ in.; the hanging stay is bolted to the top of boot of body.

The shafts are hung with hind cross spring behind and center steel bar in front, to which the shafts are clipped, the carriage being stiffened on the bar with a center stay from the bar to the foot-board.

Length of axle over solid collars, 42 in.; over solid flaps, 38 in.; width of dito, 13¼ in. by 5 in. long, butterfly; length of boxes, 9 in.

This buggy is suitable for a cob 14 hands; the shafts should be 5 ft. 6 in. from draw bar, and 20 in. between the points at tug stop; height of dash, 13 in.; depth of rein rail, 2½ in. The front scrolls and steps are forged in one, the spring being fixed with ringed jaw; the spring eye should be lined with India rubber.

VIS-A-VIS.

(See "Latest Styles.")

PLATE CXXXVII. illustrates a vis-a-vis, one of a few of this style of carriage seen at the seaside resorts last year. The turnout is an attractive one, the body being upon loops in front and having a top over the rear seat only. The harness is a long tug swell pad, full plate light coach, with horseshoe winkers and without check rein.

SURREY.

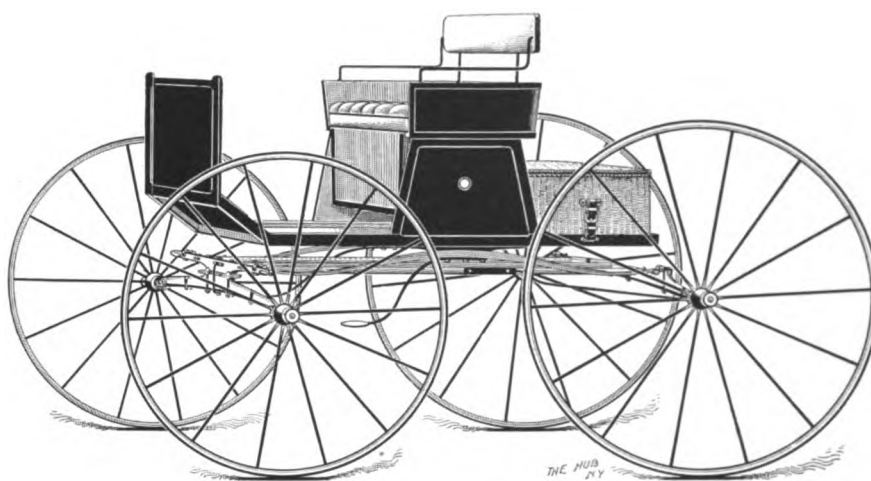
(See "Latest Styles.")

PLATE CXXXVIII. illustrates a canopy top surrey built by the York Wagon & Gear Co., of York, Pa. The body is 24 x 66 in. long; axles, 1 1/16 in. double collar; wheels, 3 ft. 4 in. and 3 ft. 8 in., 1 in. tread. This company furnish this vehicle in the white ready for painting and trimming.

THE CARRIAGE BUILDERS' TECHNICAL SCHOOL EXHIBIT AT THE PAN-AMERICAN EXPOSITION.

THE first public exposition, except at the C. B. N. A. Conventions, of the work of the Carriage Builders' Technical School will be made at the Pan-American Exposition, and an opportunity will be given to the general public to learn the work of this one of the most successful technical schools in the United States. Space has been secured in the Manufacturers and Liberal Arts Building, Educational Department. The space awarded is too small to exhibit full-size drawings, and Instructor Johnson of the Technical School has selected fifty-six drawings, placed on cards, 22 by 28 inches, all of which were made by pupils of the New York classes or by corresponding pupils. These drawings consist of freehand drawings, geometrical problems, and projections, development studies in shadows, working drawings of parts, complete scale working drawings, studies in perspective and drawing in perspective. These drawings represent the various studies and their order, prior to entering into the more practical work of full-size drawings. As this school is open only to persons connected directly with carriage building, it is to be regretted that the exhibit could not have been made in close proximity to the exhibits of vehicles, but as it is, it will be an exhibit of technical training given by the C. B. N. A. School. It has been our pleasure to look over these exhibits, and we feel assured that the others will agree with us in our high appreciation of the work done by the Carriage Builders' Technical School, under the charge of Andrew F. Johnson.

Latest Styles. May, 1901.

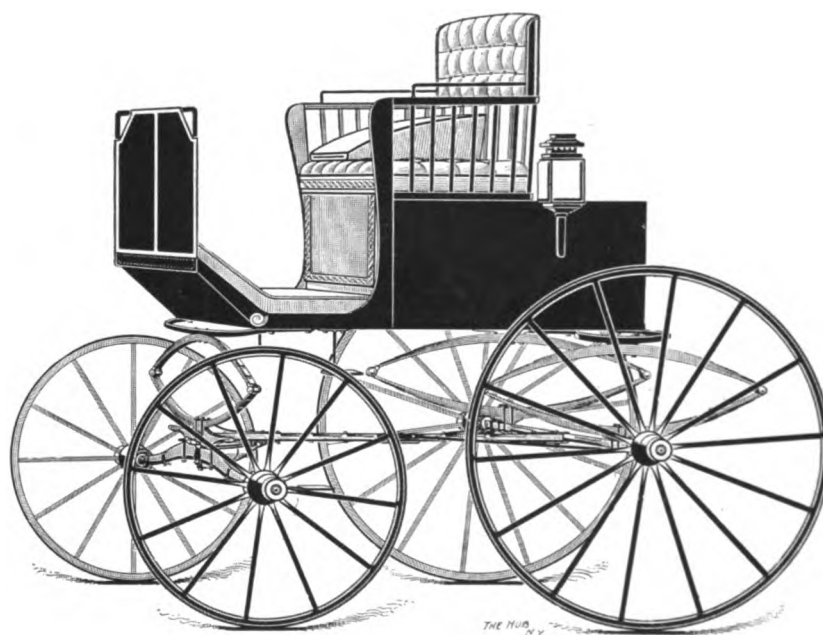


No. 504. Concord Driving Wagon.

SCALE, ONE-HALF INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.25.)

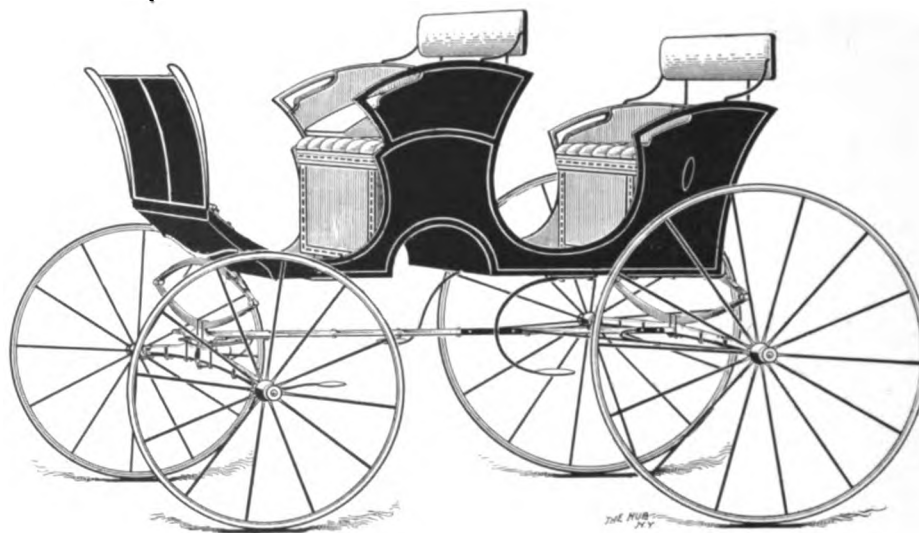


No. 505. Stanhope Phaeton.

SCALE, ONE-HALF INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.50.)

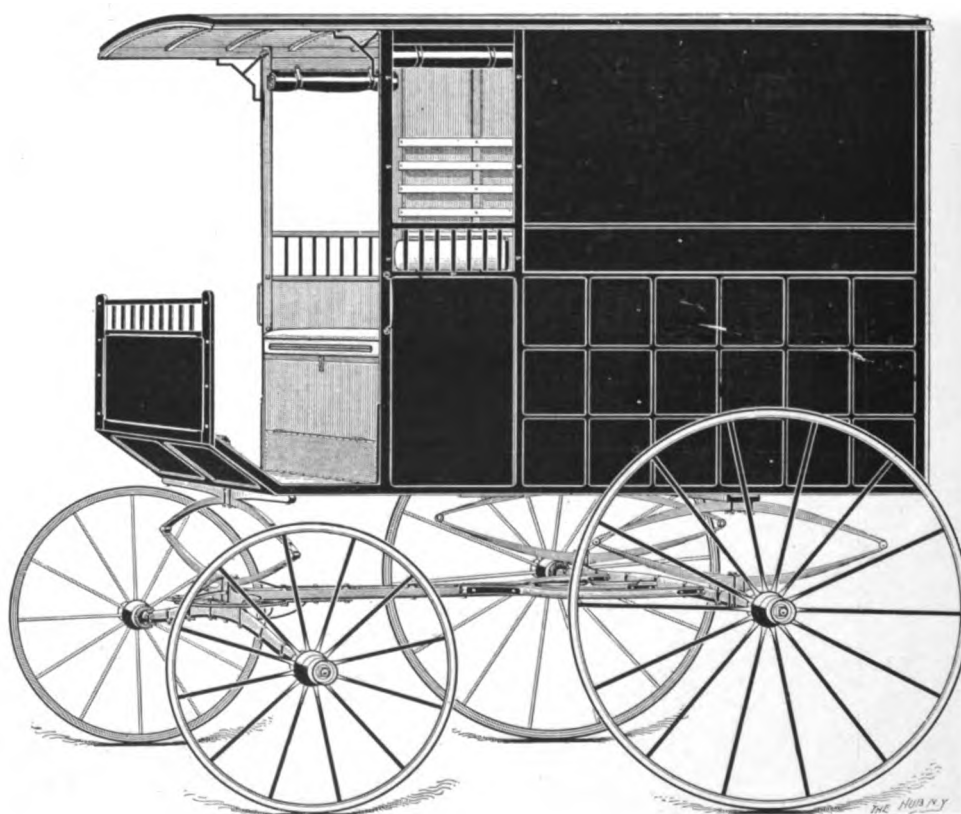


No. 506. Driving Phaeton.

SCALE, ONE-HALF INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.50.)



No. 507. Light Parcel Delivery Wagon.

SCALE, ONE-HALF INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.50.)

Plate CXXX.

Governess Cart.

See description under "Latest Styles."

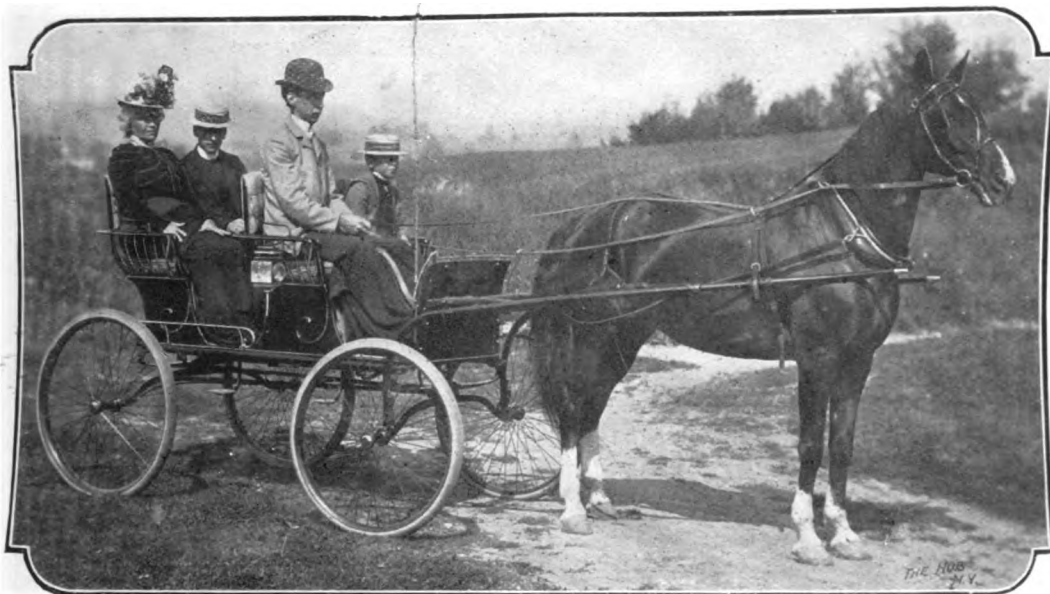


Plate CXXXI.

Pneumatic Buckboard.

See description under "Latest Styles."

Plate CXXXII.

Opera 'Bus.

See description under "Latest Styles."



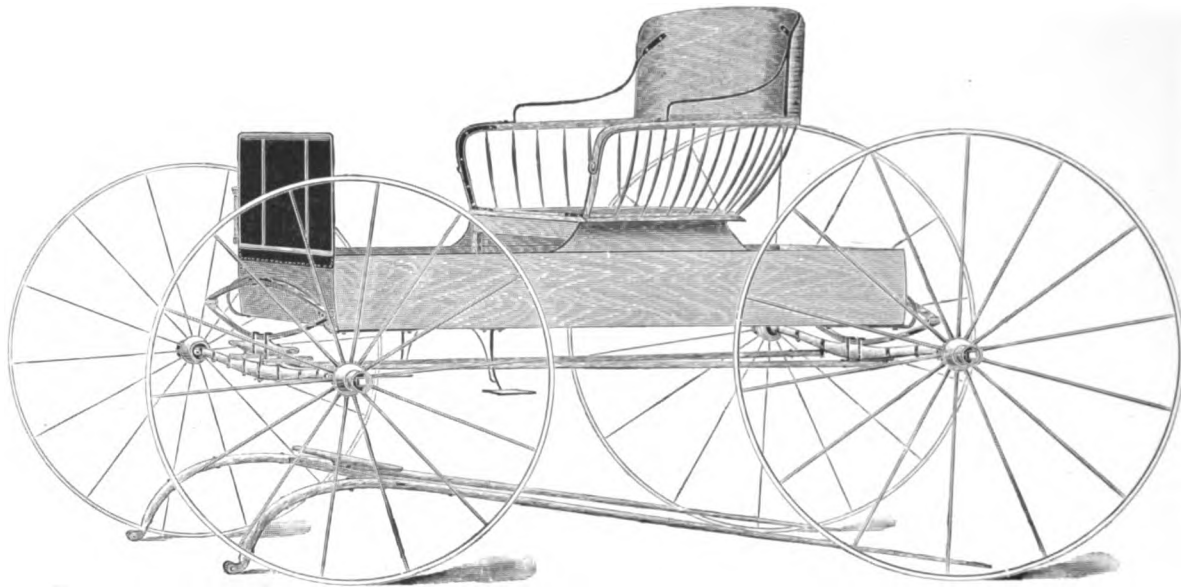


Plate CXXXIII.

Runabout.

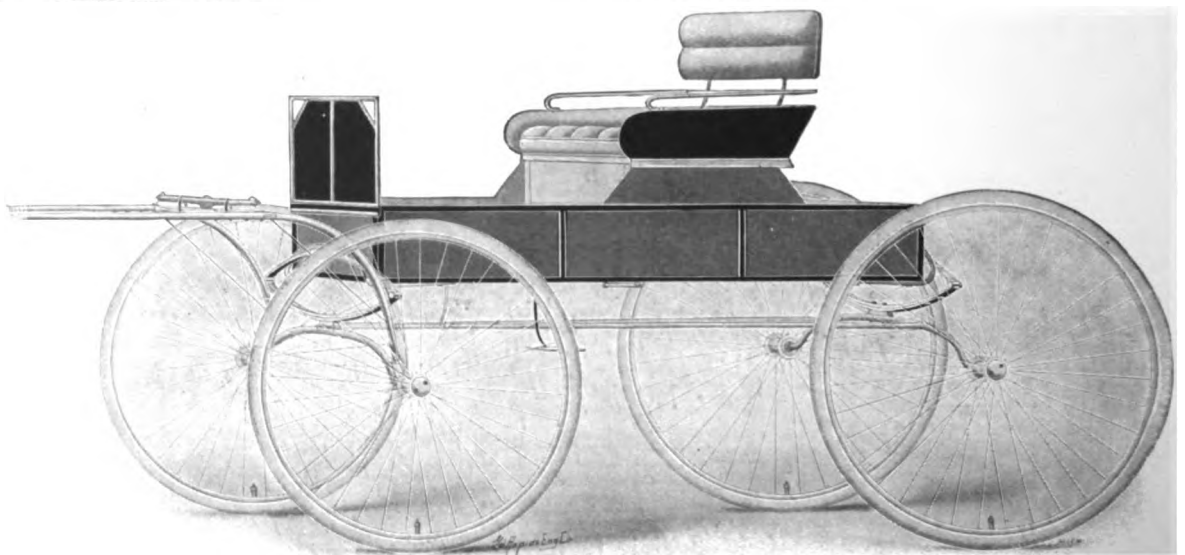
See description under
"Latest Styles."

Plate XXXIV.

No. 133
Rubinstein Wagon.See description under
"Latest Styles."

Plate CXXXV. Extension Top Phaeton.

(See description under "Latest Styles.")

Plate CXXXVI.

Sirdar Gig.

See description under "Latest Styles."

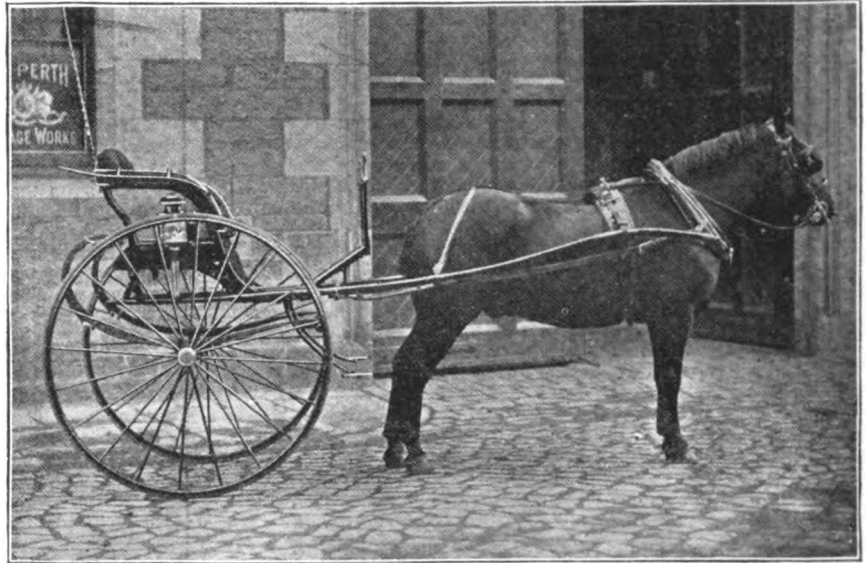


Plate CXXXVII.

Vis-a-Vis.

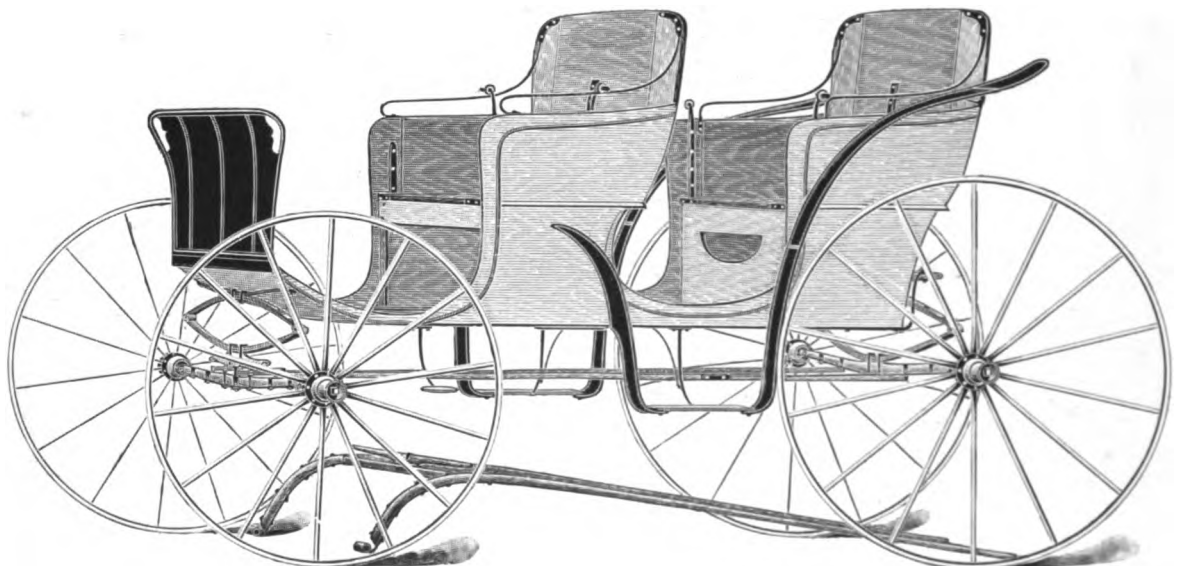
See description under "Latest Styles."

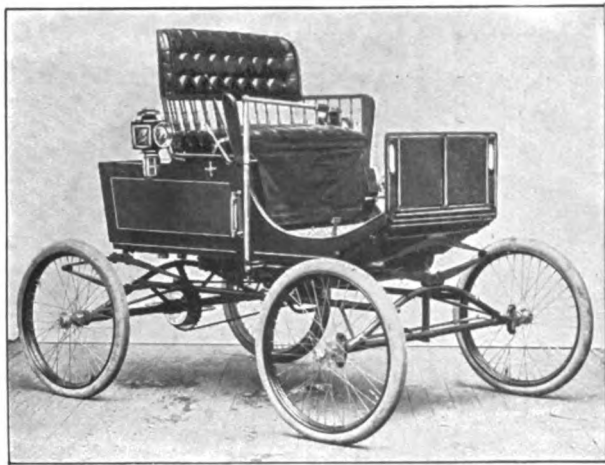
(Electrotype, \$2.00.)

Plate CXXXVIII.

Surrey.

See description under
"Latest Styles."



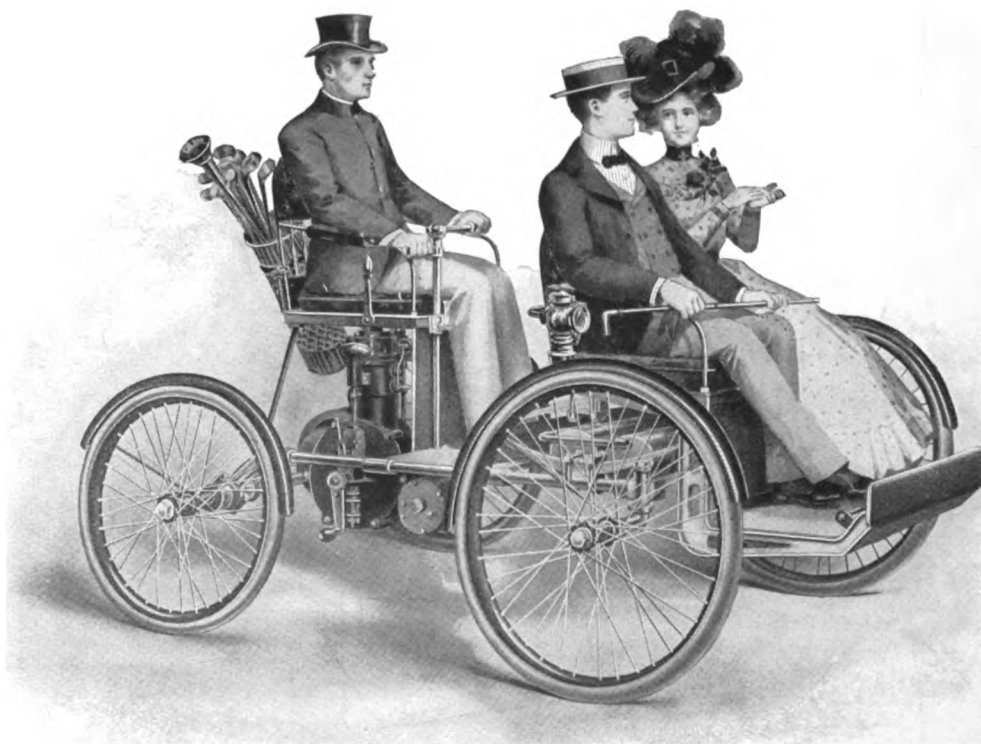


Rochester Runabout.

For description, see Automobile Department.

Loomis Park Wagon.

For description, see Automobile Department.



Keystone Golf
Automobile.

For description,
see Automobile
Department.

Grout Bros. Steam Automobile.

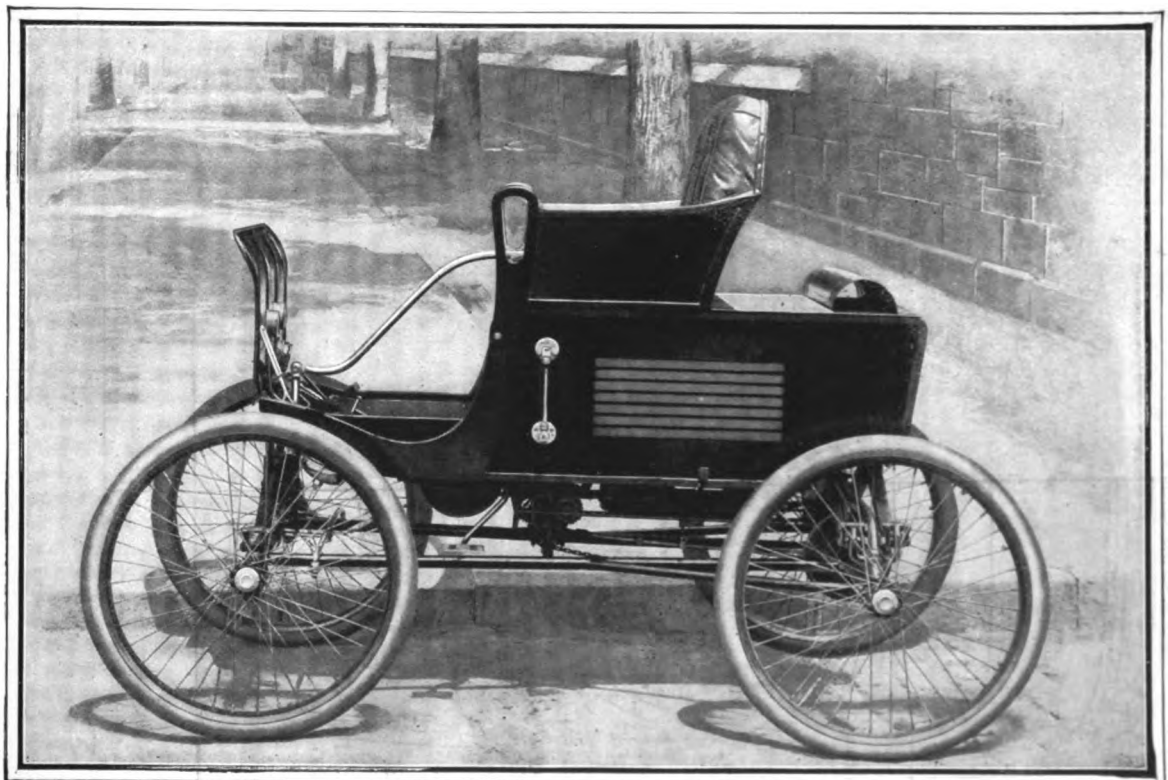
For description, see Automobile Department.



Daimler Delivery Wagon.

For description, see Automobile Department.

Steam
Phaeton
For description, see
Automobile
Department.



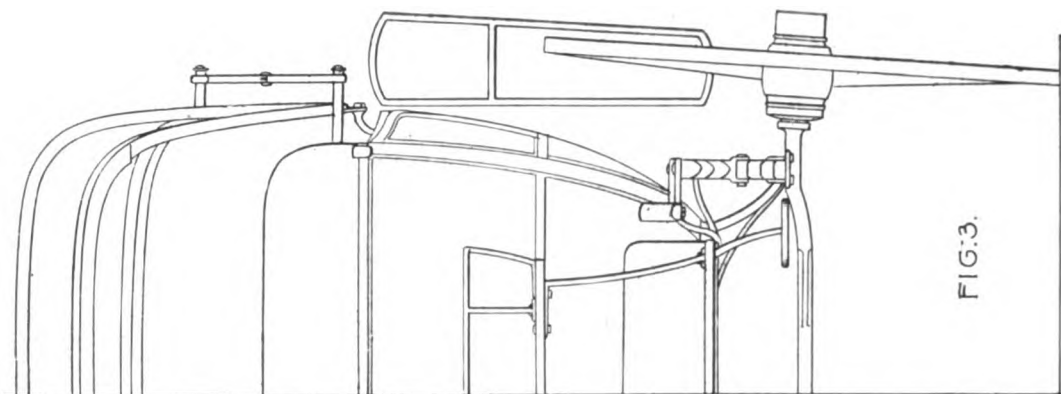


FIG. 3.

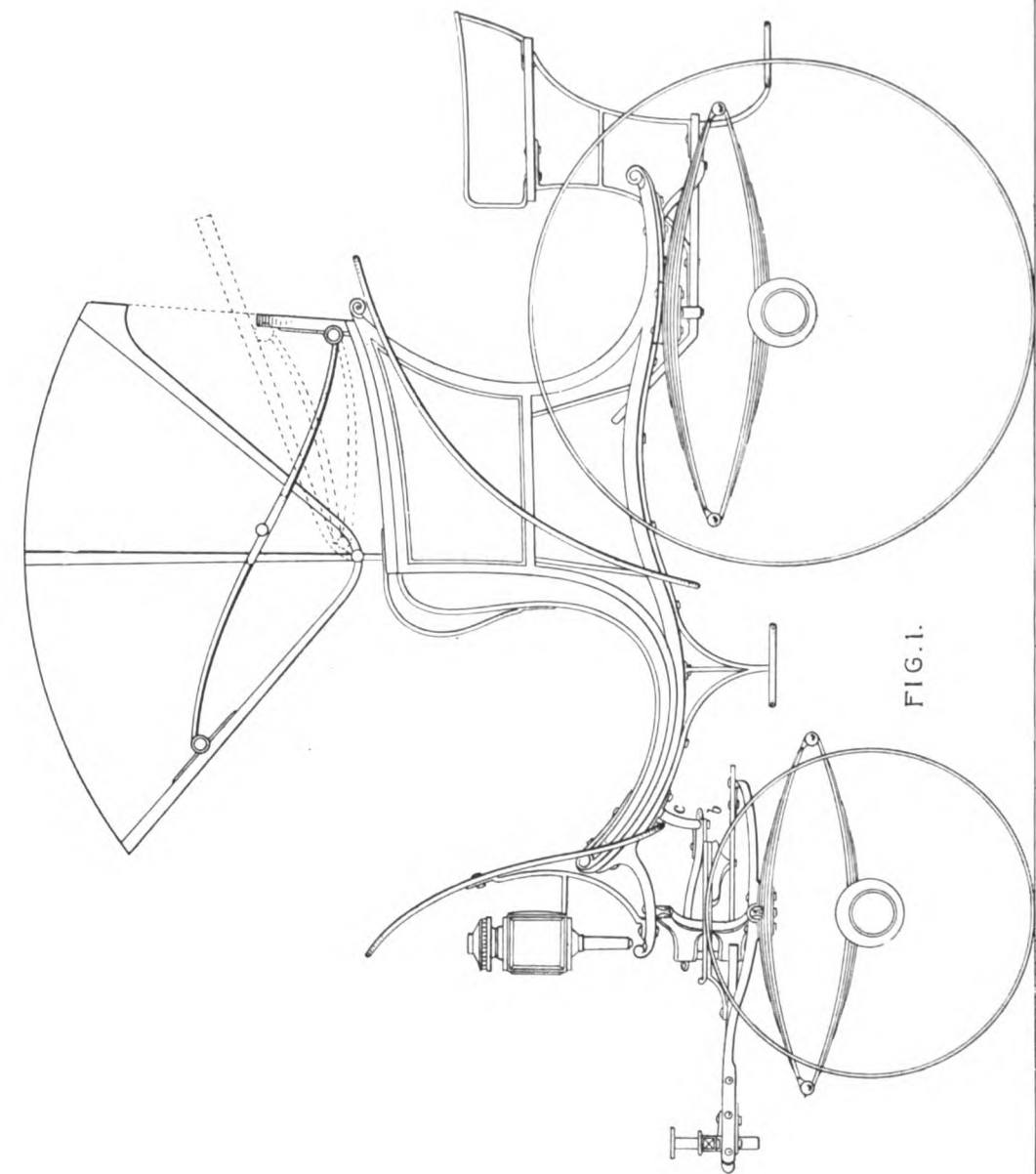


FIG. 1.

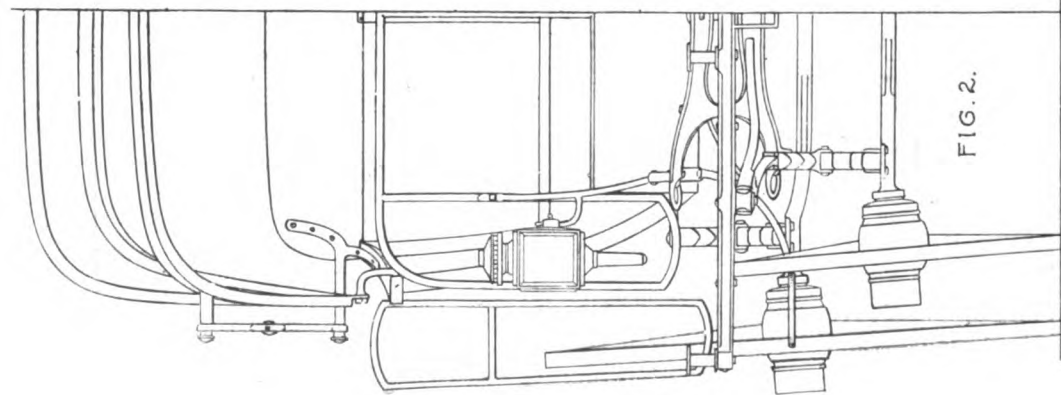


FIG. 2.

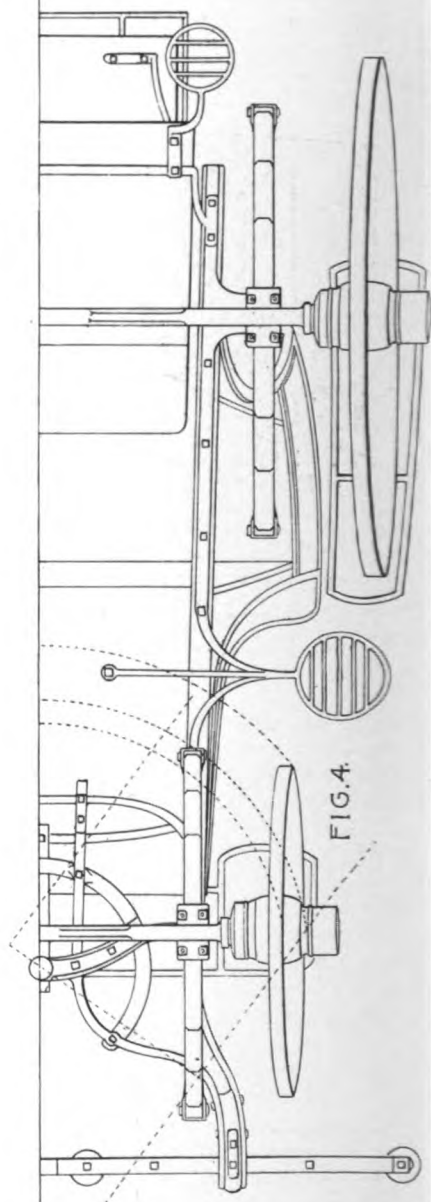


FIG. 4.

WORKING DRAWING
OF A LADY'S PHAETON.
SCALE, $\frac{3}{4}$ INCH TO THE FOOT.

CARRIAGE TECHNICAL DEPARTMENT.

Comprising the Wood, Smith, Paint and Trimming Shops.

WORKING DRAWING OF A LADY'S PHAETON.

PHAETONS of this class, when skilfully made and appropriately painted and trimmed, produce a fine looking and convenient carriage for ladies to drive.

The suspension of the body upon the front and back carriage requires special care and skill, because here begins the work of finding something that will improve upon previous designs both in appearance and convenience, in addition to the design of the body, which, however, must be so outlined as to facilitate the fixing on of the gears.

The curve of the back corner pillars is such as to harmonize with other lines, and leaves ample space for the footman when on the rumble. This corner pillar and the rocker unite in forming the pump handles, with the foot board of the rumble resting between them, and by this means the space is formed for getting in and out of the rumble. Then, too, the line is an easy one as viewed from the side. Naturally, if the side of the body is swelled from front to back, the vertical delineation of this pillar will be a convex, as seen in the rear elevation, Fig. 3, and will therefore correspond with the turnunder of the wing pillar which has a well defined convexity. By making the body in this way, we are enabled to place the seat of the rumble close up and permit the gear being coupled up short instead of long like a Victoria. It is calculated that the weight on the rumble will balance that on the front seat, and since there is about twice as much weight on the rear spring as there is on the front one, we make the hind spring of heavier steel than we use in the front, and with five plates, so that the body will ride level, but in hanging up we set the body one inch high behind, as we can see by the draft that the two seats are not strictly horizontal; they are low in front, and the body has the appearance of inclining ahead, which, when weighted, will have the correct level poise. If this phase of the suspension is not considered, tested and all faults corrected, the appearance of the carriage will be compromised when in service.

In making the drawings of a phaeton like this it is the first important consideration to have the carriage short, compact, convenient and good looking, because it must fill a certain place between the Victoria and the buggy, it should not encroach on the plane of either. If the gear is coupled out long, setting the front wheel a great distance ahead, it will then resemble a Victoria with the dicky seat removed, and retained at the back, it follows that by this arrangement we can shorten the front to that extent. This carriage is called a lady's driving phaeton in this country, and a "duc" in France. There they set the rumble seat higher than the front seat, with the idea that the coachman may, if required, drive.

In order to make room for the locking under of the front wheel, we put the bottom boards level with the top of the rockers, instead of level on the bottom edge, which will increase the distance $1\frac{3}{4}$ in. above the top of the wheel, giving a clear space between the top of the wheel and the bottom board of 5 in., which is all that is required. Drop the rear axle in the center to make room for the foot board of the rumble, so that there will be plenty of room for the play of the springs.

In the drawings here shown the front gear is bolted to the rockers, so that there can be no spring to the loops, which are short and unyielding to the sway of the pole, and it is impossible for the wheel plate to sag at the front, since the under bar is of iron and is curved down to the lug on the top plate at *b*, on to which the span bar *c* is bolted.

The front of the carriage is shown in Fig. 2, together with the rear wheel, axle and spring also, the rear swing so that we can see the different dimensions of the front and back, and thus form an idea of the appearance which one of these carriage presents as observed directly from the front.

The distance between the axles is 4 ft. 3 in.; length over all, 8 ft.

3 in.; height, 7 ft. 2 in.; width, 5 ft. 4 in., which means across the point bands of hind wheels; track front, 3 ft. 4 in.; rear, 4 ft. 6 in.; height of front wheel, 28 in.; rear wheel, 43 in.; Collinge axles, front, $1\frac{1}{8}$ in.; rear, $1\frac{1}{4}$ in.; elliptic springs, front, 30 in.; length, 8 in.; height over all, $1\frac{1}{2}$ in.; steel 4 in. plates, Nos. 3, 3, 3, and 4; steel, rear spring, 35 in. long, 9 in. high, over all, $1\frac{5}{8}$ in. steel; five plates Nos. 2, 3, 3, 4 and 4 steel, open heads, rubber cushion sleeves for bolts; length of body over all, 5 ft 6 in.; height, 28 in.; width on bottom, at toe, 28 in.; at end of the pump handle, 32 in.; at elbow, 42 in.; at wing pillar, outside of arm, 48 in.; length of top, 47 in.; head room, 3 ft. 7 in.

The panels on the body to be cane, the surface of the panel color a light blue; stanhope pillar of the same shade; carriage part light blue, striped red or orange; trimmings, cloth; mountings, silver or black.

WHY DO PANELS SPLIT?

Editor of *The Hub*:

DEAR SIR—Will you kindly give opinion or explanation in the next issue of *THE HUB* of the cause of the bursting of panels in winter. Our factory is heated by steam to a comfortable degree and occasionally excessively during the day, and at night the fires are allowed to go out or nearly so. The panels are put on dry, thoroughly seasoned under heavy pressure with best French glue and canvassed. We find after completion sometimes in factory, sometimes in transit and at other times on arrival at destination, the panels crack without any apparent cause. Do you think it due to sudden changes from heat to cold, or other causes. Any information you can favor us with will be greatly appreciated. Yours respectfully,

THE F. & C. Co.

We are inclined to contribute the trouble in great part to the panels being too dry when put on. Our experience has been that panels taken from the dry room and allowed to remain in the shop where the temperature was normal absorb atmospheric moisture and expand. We have had 28 in. upper quarter panels, $\frac{1}{4}$ in. thick, expand 3-16 of an inch in 24 hours. It is a well known fact that wood that has been kiln dried readily absorbs moisture from the atmosphere, and under extreme heat shrinks only to expand again when exposed to moisture, while that which is well seasoned, but not kiln dried, neither expands nor contracts to the extent of that which has been artificially dried. We are inclined to believe that much of the difficulty mentioned by our correspondent would be obviated if the panels were not glued on until they had been out of the dry room 24 hours. We do not claim, however, that this will prove an absolute cure, as our experience has taught us that no remedy is an absolute cure, particularly with panels cut from the revolving log, instead of being sawed in boards in the usual way.

MEETING OF THE EXECUTIVE COMMITTEE OF THE C. H. A. T.

THE executive committee of the Carriage, Harness and Accessory Traveling Salesmen's Association of the United States met in Tuesday evening, April 9, at the Grand Union Hotel, New York City.

It was decided to hold the annual meeting Thursday afternoon of the week of the Carriage Dealers' convention, which will be held in New York in October.

It was also decided to hold a banquet during that week, and the following banquet committee were appointed by President Gregory:

Committee on Publicity—C. Edgar Allen, L. H. Kronfeld, C. C. Hayes, W. D. Colclough, W. P. Nolen, Herbert Longendyke, B. F. Lounsbury, Col. E. W. M. Bailey.

Committee on Speakers—W. A. E. Cummings, W. B. Templeton, James Milburn, Jr., W. J. Whitney, W. W. Wood.

Committee on Arrangement—W. H. Taylor, William F. Adams, Charles C. Castle, William Rosenberg, C. E. Perkins.

Committee on Printing—W. P. Mallon, F. C. Reynolds, Herbert O. Peters, Ralph Britton, W. W. Young.

Committee on Finance—F. H. Cowen, P. D. Randall, John F. Galvin, W. J. Mills, C. M. Fellows.

T IRON CLIP YOKES.

EVERY wagon maker is supposed to know something about making clip yokes that will not stay in position unless much other furniture is brought into requisition in the aid thereof. Fig. 1 shows a solid clip tie, or yoke, for two clips when the clip tie is applied below or to the under surface of the axle, A, upper surface of the T iron, form-

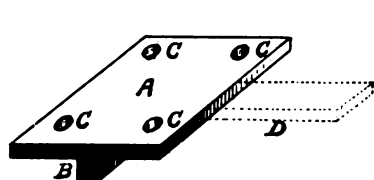


FIG. 1.

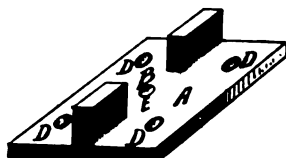


FIG. 2.

ing the clip tie, in which are located the holes C, for the insertion of the clip, securing the whole construction in that section. B, the web of the angle iron, which prevents the clip yoke from bending during the securing process. Fig. 2 shows a similar yoke for use when applied to the upper surface of the spring. This is shown bottom side up. A, bearing surface on the spring; B, recess cut out of web to fit closely to the spring; C, the section of the web which forms the recess, and when fitting close to the spring does not permit of the bending of the yoke; E, hole in recess for passage of centre bolt of spring D, clip holes. A spur on the outside of Fig. 1, as per dotted lines D, extending to the collar washer, will be inexpensive and prevent outward working of the yoke.

SOMETHING ABOUT FILES, HOW MADE AND HOW TO USE THEM.

THE general supposition is that none but the best steel is employed in the manufacture of files. With the smallest files, such as "needles," "knife," "wanders," "feathers" and saw files, it is necessary to use a very high grade of crucible cast steel, not the best, however. As the files increase in size and the size of the tooth increases so does the grade of the steel employed decrease. The steel which is used in a 16-inch rubber would not be high enough or hard enough to use for 12-inch "mill" or 8-inch "double cut," or single cut smooth. The steel for the 16-inch, 15-inch, 14-inch, 13-inch and 12-inch bastard files have another duty to perform other than cutting metal. About as great a duty depending on them as may be mentioned is the one of holding themselves together when in use. In using files of the above-mentioned size much weight or pressure is employed to get the work out of them, which fact increases each day they are used until their cutting powers are exhausted. The steel employed in such goods of files must have a coarse cutting quality and be composed of great tenacity.

For nearly forty years there has been a fight on between advocates of hand cut files and machine cut files, as to the merit of the files made by two different processes. The writer's opinion is formed from experience only, yet while there has been much improvement in the machine cut file, his preferences are in favor of the hand cut file.

The process of file making is the same all the way through. The blanks are forged, tanged, annealed and ground. Then begins the cutting process. A curious shaped chisel, more curious shaped hammer, then a leaden block on a stone or iron block, made immovable; then a leathern strap to hold the file down to the block. A little chalk rubbed over the face of the file to hold the hand steady. Then the chisel is placed on the file and the hammer is made to come down on the chisel head. The hammer is raised and so is the chisel. The chisel is brought up to the tooth just formed and down comes the hammer again, and so on until the one side is completed. It is then turned over and the other side is cut. This cutting is called the first cut. When both sides or flats of the file are cut they are turned over to the man who does the cross cutting. While in a majority of cases the average file cutter can do all the cuts, they prefer to work in teams or on special work to earn a better wage, as the cut-

ting is all piece work. It takes about six first cuts for an ordinary half-round, and from two to four more to do a round file.

When the shorter, thinner and finer cut file is reached, then comes the smaller and thinner chisel and the lighter hammer, or the hammer to suit. Formerly it was the custom to employ women to cut needle files, knife files, warders, etc. They are still employed in Europe among the file cutters. The last one employed in this country gave up about eight years ago. She began with a Mr. Wilson, and followed the various changes to the present manufacturers, James Greaves & Son, Newark, N. J.

After the cutting process is over, then comes the heating, hardening and tempering processes. Some makers still adhere to the old process of heating in an open fire, then hardening and tempering as usual. The improved plan and invention of the founder of the Graves File Works, the late Mr. Wilson, is beyond all doubt the best method of heating in existence. A wrought metal cylinder about thirty inches deep and about ten inches in diameter is filled with molten lead. The cylinder is placed in a furnace specially built for it, the fire is started, and when the lead is thoroughly melted the files are placed in the lead, tongs up, and there remain until they become as hot as the lead will make them. The files, one at a time, are then removed and pushed down into the bath-tub—usually a sixty-gallon tub filled with water well charged with salt and prussiate of potash. Raw linseed oil floats on the water to the depth of about four inches. After the file has been in the bath long enough it is removed, and while warm straightened by pressure. Then the temper is tried, and if right, or as soon as right, the file goes into the bath again and there remains until cold. The oily surface of new files or re-cut files is hereby accounted for.

The lead heating process is by far the best; the heat is always the same. By the other method the files are not reliable, many of them showing file cracks when coming from the tub. Files may be re-cut, and each re-cutting is an improvement in the cutting and lasting qualities of the file, provided the iron to be filed is "barked," or the rough taken off. A 14-inch file may be re-cut once as a 14-inch, then once as a 13-inch, by breaking off the top of the file, then once or twice as a 12-inch. The 13-inch file as re-cut is a sharp, keen cutter, and will remove iron the same as the rasp will remove wood.

Files for metal are improved for use on metal by using on wood first. Their use on wood removes the oil, and also wears off the sharp wire edge, which if not removed by wood causes broken teeth when used on iron. It is not generally known that files which are to be used on wood only require no hardening, and may be made from any ordinary steel. For years when the excess of files used in body wheel and carriage shop was too great for the smith and machine shop, he had files made from tine steel and untempered for the wood-working departments. They were equal to the tempered files, and produced a saving of about 20 per cent.

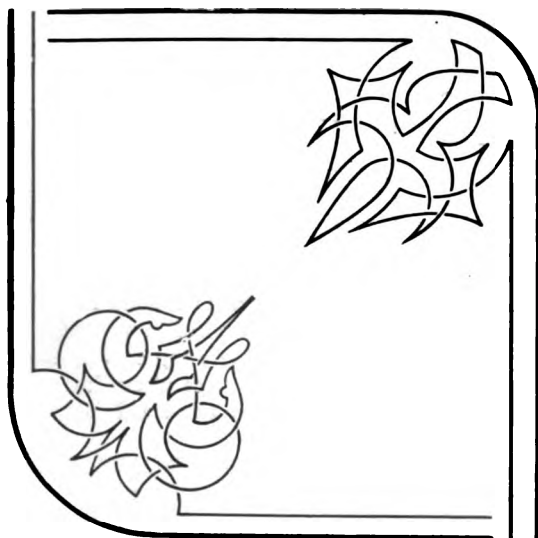
If files become greasy, work a piece of charcoal with the teeth and the grease will be removed. A piece of wire card nailed to a flat piece of wood is good to clean the file of wood and dry dirt.

CARRIAGE COLORS THAT WILL PREVAIL DURING THE SPRING AND SUMMER SEASONS OF 1901.

The leaders, those who paint their vehicles without waiting to see what someone else is going to do, have so far showed their hand that we can safely foreshadow their color scheme for the spring and summer of 1901. We mention these two seasons specifically, as there may be an entire change for the fall and winter when less brilliant colors and modified tones may rule. The season opens with bright colors and rich shades far in the lead. This does not mean crude, unartistic application of high tones, but a careful selection of shades, discrimination in the use and an artistic toning that will enrich the carriage and give a variety based upon judicious selections for specific classes of vehicles. Those that require to appear light will have colors that will aid in that result. Those that appeal to the bright and cheerful surroundings of the gay summer season will be painted to heighten that effect. The strictly staid and aristocratic vehicles will be dignified and somewhat austere, the ultra autocratic dark and sombre. The close carriages of the brougham family will be so colored as to preserve their heavy proportions. These conditions will govern where there are no family colors. A few of these have been maintained for years and will not be influenced in any way by what fashion may dictate, and the ultra fashionable will not encroach by imitating these family colors.

Let it be understood, then, that in specifying the painting of dif-

ferent classes of vehicles, our remarks are confined to work built by first-class and high-grade builders. Beginning with the standard one-man road wagon the bodies will be black as heretofore, and without striping. Red gears will have the lead, the red being on the line of vermillion. Striping will be confined to fine lines, which will not be noticeable when the vehicle is in motion, but which contribute to giving a pleasing effect when viewed at a standstill. The ironwork, black. A black gear striped with fine lines of red or orange is fa-



CORNER STRIPING DESIGN.

vored by some. The paint, however, is simplicity in coloring and fine finishing.

Speeding wagons have been sprung on the market so suddenly that no settled scheme as to coloring could be settled upon, and last season saw many freak colorings; but a few enterprising dealers who are handling these vehicles are demanding more care as to details. These vehicles are not essentially pleasure carriages, but they should be well painted and made as attractive as possible. The disposition of gentlemen drivers is to follow the one-man wagon in coloring, but some favor an entire change. One has ordered hazel brown for the body panels and seat panels, and black risers. The gear crimson lake, striping fine lines vermillion, ironwork black. Another burnt sienna body and seat, carmine gear and seat risers. Runabouts permit a broader range in gear colors than other wagons of this class, but the bodies are usually black without striping. The gears, any one of the reds, orange, cream, lemon or primrose. The two-passenger square body top buggies, whether side-bar or elliptic spring, have the bodies painted black; seats, if slats, black and fine striped on the rails and slats. Bodies of the Goddard and Corning types are black, dark green or blue, and striped with hair lines. Those of the Whitechapel with pillars and rails are in dark colors, or they have maroon or lake panels. The gears may be red, orange or lemon yellow. The only deviations are where the carriages are built for the western and southern trades or for export, in which case the bodies are ornamented and striped quite profusely, and the striping on the gears is wide line.

Surries and four-passenger phaetons take a broader color range. Maroon, light brown, olive and other dark greens are all used on the panels with seats of the same color or black. Red of some one of the new shades, orange and primrose striped black are favored for gears. When paneled pillars are used the panel is painted of some contrasting color, but care is taken to avoid too strong contrasts. To illustrate, if the panels are brown, the panel may be in olive green; if black body, dark carmine or lake gives a good contrast. The point to be observed, however, is to make the secondary colors harmonize with the gear colors.

The line of small carriages designated as "morning carts" offer a wide range for color effect. With these black or extra dark colors are out of place except for striping or coloring ironwork. Dark green panels and black mouldings on the body and willow green striped black on the gear give good results. Maroon, light blue, lake, light olive, all furnish good body colors, while primrose, orange, willow green, vermillion of the pale shades, cream, chrome yellow all furnish good gear colors; the striping, black or red.

The family vehicles, such as rockaways of all kinds, except perhaps the coupe rockaway, which is now much less in evidence than it was a few years ago, have body panels black, blue, green or maroon; frame work, black, striped to harmonize with color of gear

of that is in red or other bright color, or with red or cream if the foundation color is dark. Olive green panels and a lighter shade of olive green on the gears, the whole fine lined with red and frame work of body and ironwork black, make one of the best of this season's combinations. The great class of gentlemen's vehicles, such as Stanhope phaetons, speeders, mail and demi-mail phaetons, carry a large line of colors for bodies, such as black, London smoke, maroon, dark olive green and brown. The gears, however, are either of the same color as the body or of some rich dark red. Occasionally one is seen that is painted orange, or some shade of that character. The ironwork, black, very little striping being seen on gears of these vehicles except it be with the two-passenger. The panels in the Stanhope pillars are either outlined by striping or they are painted a shade to harmonize with that of the gear. Where light colors are used on the gears the panel is painted the same color, but of darker shades. Two-wheelers of the gig type have dark bodies; side ornaments in some bright color; wheels, shafts, etc., carmine, primrose or orange striping black or red. Those of the sporting family, such as covert carts, going-to-cover, and a variety of designs of no special character may be painted light cream, dark vermillion, olive or other green. Wheels and shafts, vermillion or carmine striped black. The other sporting vehicles, such as drags, breaks, large and small, have bodies and panels painted black, maroon or green. Panel ornaments some bright shade to harmonize with the color of the gear. Every available point, such as seat risers, toe board panels, dusters, rockers, etc., are touched with the harmonizing bright colors. Painters of these vehicles enjoy a wide range, as the gay colors worn by the riders allows the employment of bright colors in painting. The gears, as well as the bodies, have very little, if any, striping, the ironwork, including bolt heads and nuts, black.

Of the more aristocratic vehicles, such as ladies phaetons, cabriolets, victorias, broughams, landaus, etc., the more subdued colors are used. The first mentioned have maroon, dark green, black or blue panels, and dark gears to match. The little striping used is hair line. Whether as a sudden whim or chance there is a marked disposition to paint cabriolets and victorias in black throughout, and to dispense entirely with striping. This whim has not extended to other classes to any material extent, but with the half top vehicles it has made much headway; but we apprehend that the winter of 1901 and 1902 will end this rather uninviting feature. Broughams, landaus, coaches, etc., use green, blue or maroon quarter, door and back panels, with black mouldings, and upper panels, and very little striping; gears to match quarter panel colors or carmine, or some other red of that general tone striped black. As we have said before striping is far less conspicuous than heretofore, although used on all but the sporting vehicles.

Automobiles demand attention of carriage painters and those not built on carriage lines will bear the free use of colors not used for a



CORNER STRIPING DESIGN.

century at least on carriage bodies. There is everything to recommend strong bright colors or white or cream, because of their conspicuousness. Carmine, vermillion, strong green, maroon, blue, all appeal to the senses as fit colors for the machine carriage. Those built on carriage lines can follow carriage fashions in painting, but they would lose nothing by employing brighter colors. Artistic coloring will greatly contribute toward removing the appearance of

clumsiness now so general and by brightening up their appearance, particularly those used as hacks, make them more attractive to the public. There need be no band wagon decoration, but there can be a change that will meet the approval of the people of taste. The French do things in this line better than we do, and from them our painters could learn lessons, providing they are permitted to do so.

The color field is almost unlimited. The mixed colors for coach and car makers use numbers well into the hundreds, of reds, a single house furnishes 36 shades and tones, of greens 45, blues 10, browns 12, of yellows 20, of lakes 25, to which the paint mixer may add an almost indefinite number of shades and tones. With all this material at hand there is an extended field for study and work.

BUGGY TOPS.

THE illustrations show a few points of finish which are not in general use in the trimming of buggy tops. Fig. 1 represents the back bow valance into three sections. The dotted lines represent the in edge of the back bow; also the inner edge of the back stays.

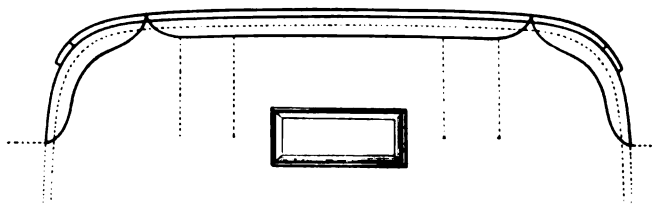


FIG. 1.—BACK BOW VALANCE.

The glass frame shown in the illustrations is intended for the outer side of the curtain. Its construction will be noticed farther on. There are two very good reasons for making the bow valance in three sections, *i. e.*, economy of the material which is to form the valance and the neat and attractive appearance which the three-piece valance adds to that part of the top. To make the valance in one requires a large piece of leather. Then, too, it requires nearly one-quarter yard of cloth to cover the one piece valance which is quite an item compared with three small pieces of cloth to cover over the one shown.

In forming the valance select three pieces of grain dash leather dampen the flesh side and slick out well. Tack each piece separately to the bow and carefully mark along the top and bottom edges of the bow. Mark each point of the back stays; also the point where the binding of the back bow ends; also at the bottom of the side quarters. At this point on the valance mark one-quarter inch scant to the side quarter mark on the bow. Shape the pieces to extend full one-quarter inch above the top of the bow, to act for a binding piece, and cut neat to the bow, from the end of the binding to the bottom of the quarters. Cut the pieces from the mark of the inside

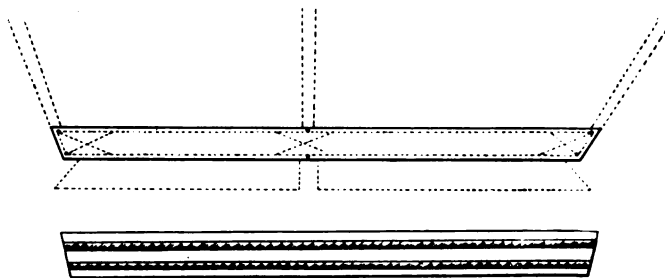


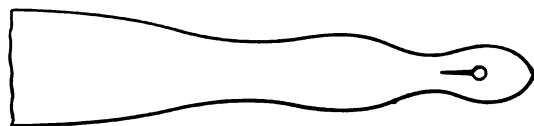
FIG. 2.—SIDE BANDS.

of the bow $1\frac{1}{4}$ in. wide with the corners nicely rounded off. Skive the inner or binding edge of the valance off one-half the thickness of the leather so as to get a thin binding edge. Paste cloth over the flesh side of the leather, and when dry trim the cloth away from the edges. Bind the bottom edge of the valance pieces with very thin binding leather sewn on by hand near the edge with a light thread. Turn the binding over the edge and paste to the back of the valance. When dry stitch neatly on the machine near the edge of the binding. No cord-welt is used between the bow and the valance.

The four roll-up straps can be made very neat and serviceable shaped as per design out of light grain dash leather lined with thin top leather, and stitched full $\frac{1}{8}$ in. from the edge. Place the glass frame in the curtain in ordinary manner; dampen the leather on the flesh side $\frac{1}{2}$ in. away from the frame, apply on the grain side a little

grease and crease heavily with the tickler 5-16 in. from the frame, mitered at each corner. The leather must be dry before the frame is put in. If the crease lines are well made they will remain in the leather as long as the curtain will last.

At the bottom of the back curtain instead of reinforcing with a thick piece of leather and a very wide piece, too, which is often the case, dampen the flesh side of the curtain leather to about $2\frac{1}{2}$ in. and crease the stitching lines. Baste over the knob mark small leather



ROLL-UP CURTAIN STRAP.

stays with the edges shaved off on the grain side. The lining for the curtain is pasted at the bottom over the space from the bottom edge to just above the crease lines. Stitch the leather and the lining together at the crease lines before stitching around the edges.

The design of the side bands is shown in Fig. 2. These bands can be made an attractive point to the buggy top or very slovenly and unattractive; but, nevertheless, it is a place where just a little taste and pains is required so as to have the two small side bands a feature of the top.

The style of the side band suggested in illustration can be made on a strip of duck canvas, the white side of the canvas sized over with thin paste. When dry they shape the mouth $1\frac{1}{2}$ in. wide. If for a very light top the width can be reduced accordingly. Tack the canvas to the bows at the proper place and mark the edges of each bow carefully on the canvas. Reinforce the face of the bands with thin top leather, felt goods or other suitable material. Cut the width to allow $\frac{1}{4}$ in. edge space for stitching; cut the reinforced part in sections as shown. Place the pieces far enough apart to easily allow the cloth to crease in between them. Paste the flesh side of the leather pieces to the face side of the band. Cut the cloth wide enough to turn over the top half way of the width of the band, and the lower part to extend over to the top of the band. Apply paste only along the edges of the canvas and in between the sections. Before laying the cloth on the paste must be cleaned from the surface. In drawing the cloth over it must not be strained either way; rather pull in crosswise. When the cloth has been satisfactorily creased down it ought to remain for a while before turning it over the edges. Paste the top part of the cloth over firm on the back of the band, the lower part only over $\frac{1}{2}$ in. When the bands are ready for stitching pull away the lower part of the cloth from the back of canvas. In pasting the bands to the head lining, the dusters, the bands, and the lower band cloth to the dusters, care must be used not to allow the paste to be the least above the top of the band or it will show on the face of the head lining.

NEW JERSEY ROADS.

WE are in receipt of a copy of the New Jersey report of Commissioner of Public Roads, 1900, a volume of 200 pages, properly illustrated, by Henry I. Budd, State Commissioner of Public Roads, in which the entire work of road building for the year is given in detail, showing the miles and character as well as the cost of the roads; also the total amount expended by the State since the passage of the State aid law. During the year 1900, 148.28 miles of road were built; the total under the law is 532.11 miles of road at the cost of \$865,318.55. In addition to the statistical report, there are numerous papers on road matters of general interest, and a map of the State of New Jersey, showing the location of the roads now built.

OMITTED THE LITTLE "TO."

THE omission of the little preposition "to" has caused us and the Squires Carriage Co., of Cleveland, O., much annoyance. Its omission in the April notice caused us to say that "The Standard Vehicle Co., located at No. 26-38 Broadway, who have been located there for the past six years under the management of C. F. Emery, has also sold out the Squires Carriage Co." It should have read, "Sold out to the Squires Carriage Co." We ask our readers to take note of this correction and act accordingly.

FREIGHT RATES.

AN APPEAL TO CARRIAGE SHIPPERS.

GENTLEMEN:

The importance of the enclosed documents must appeal to your interests, and a prompt compliance with the requests made in them should have your immediate action and an enthusiastic co-operation. This, if hearty enough, will have great weight on the official classification committee. The latter should see that we are a unit in the matter, and no uncertain sound should go out. Heretofore a small committee has done the work and brought the matter to its present crisis. The present concise data and plain illustrations show the matter in as brief a manner as possible, and gives you the facts, proofs and arguments, to which you can add your personal experience.

The scarcity of big freight cars, owing to the loading into them of the 50-inch and N. O. S. packages in full cars, has made a famine in that line that promises serious results, and the present classification for this package is the cause of the famine, and means that the railroad companies don't get the rates they demand and are big losers by the operation. We are distressed and are being demoralized because we cannot relieve ourselves by L. C. R. shipments, because the rates on them are practically prohibitive. We, like the signers of The Declaration of Independence, must either "hang together" or "hang separately." Now is the time to bring the pressure on the lines suggested. Write at once, and to every member of the official classification committee.

Yours very truly,

W. A. PATTERSON, Flint, Mich.

C. D. FIRESTONE, Columbus, O.

MORRIS WOODHULL, Dayton, O.

Freight Committee of the Carriage Builders' National Association.

A. G. BRUNSMAN, Cincinnati, O.

GEO. H. DEGOLYER, Cincinnati, O.

MORRIS WOODHULL, Dayton, O.

Freight Committee of the Cincinnati Carriage Makers' Club.

READ CAREFULLY. IMPORTANT! IMPORTANT!

For the third time in fifteen months, the official classification committee has denied the petition of the carriage manufacturers to reduce the present burdensome classification on the following vehicle packages, viz.:

Fifty inches and under—double first-class.

Fifty inches and under, exceeding ninety-four inches in length—two and one-half times first-class.

N. O. S. packages, meaning over fifty inches in height—three times first-class.

Your committee, after having twice been denied relief, made the third application on L. C. R. packages last January, as follows:

"Packages exceeding thirty inches in height, and not exceeding fifty inches in height, and not exceeding ninety-four inches in length.

"The present classification on the above is double first, and we think the same should be reduced to 'one and three-quarters first.'

"Packages exceeding thirty inches, but not exceeding fifty inches in height, and exceeding ninety-four inches in length.

"The present classification on the above is two and one-half times first, and we think the same should be reduced to 'double first' on lengths not exceeding ninety-six inches.

"Packages N. O. S. to include packages not exceeding fifty-six inches in height and ninety-eight inches in length, present classification of which is three times first, we think should be reduced to 'two and one-half times first.'

"This will give great relief to the carriage industry of the country. In our committee making this request, it can be construed by your committee that the carriage makers of the country are satisfied with the present classification of 'one and one-quarter first' on L. C. R. packages thirty inches and under, and not exceeding ninety-four inches in length."

This petition was signed by the following well-known carriage makers and members of the executive committee of the "Carriage Builders' National Association":

C. F. Kimball, Chicago, Ill.; S. K. Page, New Haven, Conn.; W. W. Ogden, Newark, N. Y.; Morris Woodhull, Dayton, Ohio; Tom Connolly, Dubuque, Iowa; E. W. M. Bailey, Amesbury, Mass.; H. C. McLearn, Wilmington, Del.; F. B. Judkins, Merrimac, Mass.; D. T. Wilson, New York City; C. D. Firestone, Columbus, Ohio; Frank L.

Wright, St. Louis, Mo.; Chas. A. Carlisle, South Bend, Ind.; W. C. Durant, Flint, Mich.; D. M. Parry, Indianapolis, Ind.

This third petition went the way of the rest and was denied.

Mr. C. E. Gill, Chairman of the Official Classification Committee, notified your committee of this decision, and added that the matter would again come up before the committee at their next meeting."

Mr. Gill also kindly consented to notify the Carriage Makers' Committee of the date of the next meeting of the Official Classification Committee, when this date was determined on, and that the Carriage Makers would be permitted to be heard in person before the Official Classification Committee.

In the meantime it is highly desirable and very important that each member of the Official Classification Committee be fully posted as to the reason why and how this present classification is unjust, unequal and oppressive to the carriage makers; and each carriage maker should feel called upon personally to write immediately to each individual member of the classification committee a personal letter, and set forth, in a clear and unmistakable manner, the facts, proofs and arguments in the case, and state the broad and foundation fact that "the present rates complained of are more than the traffic will bear," they being harmful alike to the railroad, the maker and the consignee.

The following are the names and addresses of the members of the classification committee:

C. E. Gill, chairman, 143 Liberty St., New York City.

J. P. Orr, 143 Liberty St., New York City.

Geo. E. Terry, New York City, A. G. F. A., N. Y. Central.

K. B. Chamberlin, New York City, A. G. T. M., Erie Ry. Co.

P. J. Flynn, 26 Exchange Pa., New York City, G. F. A., D., L. & W. Ry.

C. A. Blood, New York City, A. G. F. A., Lehigh Valley Ry.

C. S. Wight, Baltimore, Md., M. F. T., B. & O. Ry.

A. E. Billings, Toledo, Ohio, D. F. A., L. S. & H. C. Ry.

A. H. McLeod, Cincinnati, Ohio, F. T. M., C., H. & D. Ry.

S. B. Knight, St. Louis, Mo., G. F. A., Wabash Ry.

Hudson Fitch, Toledo, Ohio, Ohio Central Ry., G. F. A.

H. B. Chapin, Boston, Mass., G. T. M., Boston & Albany Ry.

M. T. Donovan, Boston, Mass., F. T. M., Boston & Maine Ry.

G. B. Hill, Gen. Fgt. Agent, Columbus, O.

In writing to the committee, it should be stated frankly that the present carload rate is, in the main, satisfactory, although it is fully as high as "the traffic will bear"; that the classification of the thirty-inch package of one and one-quarter first, while not complained of, yet you feel convinced that this package is carrying its full share. Yet the carriage maker does not complain of either of these rates, but does complain that the present classification on the packages complained of works a serious hardship and an injustice, against which not only the carriage maker, but the consignee, seriously protests.

The sheet herewith explains fully the comparisons between the carload, the thirty-inch package, the fifty-inch package and the N. O. S. package, as they relate to each other, and a careful study of this schedule and diagram will show the carriage makers, as well as the official classification committee, that the discrimination against the fifty-inch package and the N. O. S. package is excessive and entirely out of proportion to the space it occupies and the value it represents.

It must be admitted that the thirty-inch package, by reason of its convenience and ease of handling, should have a lower rate, and it is nothing but simple justice to so recognize it and give it the benefit of the lower rate. But the difference between it and the fifty-inch package is unjust, unfair, unreasonable and impractical, and the request that the fifty-inch package and the package exceeding ninety-four inches and the N. O. S. package should be put on a more equitable basis is but just, wise and a business proposition.

The difference in classification is not only manifestly too great—and the best evidence of this is the fact that the consignee will not pay it—and a glance at the "diagram" will show clearly why the consignee will not pay it.

The consignee has learned by experience that, the local rate being prohibitive, his only escape is to bunch his orders in carload lots. He finds that in a 40 to 45-foot furniture car he can load, in average sizes of 50 inch and N. O. S. packages, about 12,000 pounds, and where a local of 50 cents per hundred single first-class maintains, the car rate is about 23½ cents per hundred for 20,000 pounds. This rate for 12,000 pounds actual weight makes the rate 39 cents per hundred pounds of the actual weight of the car. Hence, he can land a 50-inch package weighing 700 pounds for \$2.73 per job, against \$7.00 for the same package sent local; and on a N. O. S. package weighing

1,100 pounds he can land it for \$4.29, while the freight if shipped local at three times first would be \$16.50.

The attempt to enforce the present classification on the 50-inch package resulted in the L. C. R. business being entirely wiped out, and the same package shipped in carloads, to the loss of the railroad company and great inconvenience to the shipper, by reason of the difficulty and delay in getting together simultaneously a shipment from three or four makers to complete a car.

The result of this has been two serious handicaps:

First—The utter impossibility of the manufacturer of the 50-inch package shipping his goods L. C. R. as they come out of his shop finished and keep his packing room clear.

Second—The railroad company loses the difference in revenue between an unreasonable classification for the 50-inch package and the carload rate.

Third—The general demand for such cars has been entirely beyond the capacity of the railroad to supply during the busy months of the first half of the year, and shippers have to wait from one to four weeks to secure a suitable car to hold the packages.

The experience proves conclusively that the present classification L. C. R. is "more than the traffic will bear."

To sum up the situation, the results show conclusively:

(a) In the attempt to enforce the present classification, the railroad does not get the revenue.

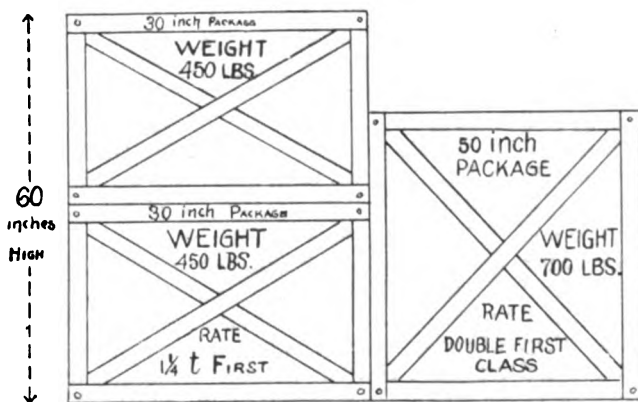


Figure I.

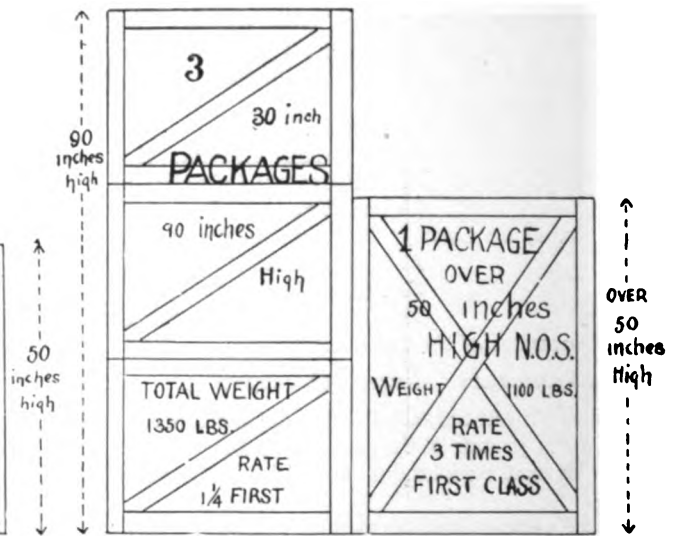


Figure II.

DIAGRAMS SHOWING COMPARATIVE SPACE OCCUPIED BY VARIOUS PACKAGES, THEIR WEIGHT AND CLASSIFICATION.

(b) They only get carload rates, whereas they could get a liberal L. C. R. rate.

(c) Both the shipper and the consignee have a feeling of outrage that is not healthful, pleasant, or profitable to either the railroad company or their customers.

In writing to the Classification Committee, give incidents along the lines suggested above from your own experience. Either prove or disprove the assertion that the local business in L. C. R. on 50-inch packages is either destroyed or badly demoralized; give instances, if you have experienced them, to show where your shipments have gone in carloads instead of L. C. R.

It is highly important that the Official Classification Committee should know:

First—Just how the present classification operates; second, whom it affects; third, how it affects your firm personally.

The Official Classification Committee is desirous of knowing all the facts—to know them individually and as a body—and you are the people who are suffering and can give them.

Do not fail to write at once.

Another matter should be fully discussed in your correspondence, and that is the difference between the "Official Classification," the "Southern Classification," and the "Western Classification," and they are as follows:

	Official Class No. 21.	Southern Class.	Western Class.
Vehicles K. D.			
30-inch packages.....	1 1/4	1	..
50-inch packages.....	D 1	1 1/2	..
50-inch packages and exceeding 94 inches in length.....	2 1/2 t. 1	..	..

50-inch and over packages.....	2 t. 1	..
Packages N. O. S.....	3 t. 1	..
Any size package.....	..	1 1/2

From the foregoing table it can be readily seen that on the Western classification any size package may be shipped at 1 1/2 times first and that the Southern classification is from one-half to a full classification lower.

"Now, if these Western and Southern roads, running through poor and sparsely settled parts of the country and miles and miles of desert and corn fields and wheat fields, are satisfied with this rate, the roads doing business in what we call 'God's country,' or the thickly populated portions, where passenger traffic and freight tonnage are many, many times greater, you can surely afford to make equally good rates, and you ought to make better rates.

"We have withstood this hardship as long as we feel that we can bear it, and we now come to you for relief."

It certainly appears to us as a bad business proposition that you (the railroads) are attempting to enforce a rate that 15 months' experience has demonstrated to you is "more than the traffic will bear."

For illustration of comparative tariff charges a basis of 50 cents per 100 single first, L. C. R. is taken in this calculation.

The fifty cent single first-class rate in these calculations is only taken because it is a convenient decimal, but the percentage of difference remains precisely the same, whether the single first-class rate is 15 cents per 100 pounds or \$1 per 100 pounds.

Fig. 1. Shows two 30-inch packages combined. Height, 60 in.; weight, 900 pounds; rate, "1 1/4 first," at 50 cents single first, and is billed at 62 1/2 cents per 100 pounds. Total, \$5.60 for both packages.

Fig. 1. Also shows one 50-inch package. Height, 50 in.; weight, 700 pounds; rate "double first," at 50 cents single first, and is billed at \$1 per 100 pounds. Total, \$7 for the one package.

The latter occupying 10 in. less space and weighs 200 pounds less; showing that two 30-inch packages weighing 900 pounds may go at \$5.60, while one 50-inch package, occupying 10 in. less space, and weighing 200 pounds less, is \$7.

Fig. 2. Shows three 30-inch packages. Height, 90 in.; weight, 1,350 pounds; rate, "1 1/4 first," at 50 cents single first, and is billed at 62 1/2 cents per 100 pounds. Total, \$8.43 for the three packages.

Fig. 2. Also shows one N. O. S. or over 50-inch package. Weight, 1,100 pounds; rate, "three times first," at 50 cents single first, and is billed at \$1.50 per 100 pounds. Total, \$16.50 for the one package.

The latter occupying two-thirds the space occupied by three 30-inch packages and weighs 250 pounds less.

Further illustrations: At a 50 cent single first-class rate "L. C. R." the rate in car lots would be approximately 23 1/2 cents per 100 pounds for 20,000 pounds minimum, or \$47 for the entire car. The average contents of a 45-foot car containing 50 inch and assorted N. O. S. packages would weigh 12,000 pounds, which makes a rate of 39 cents per 100 pounds, actual weight. Hence a 50-inch package weighing 700 pounds shipped in car lots at 39 cents per 100 is \$2.73 each. "L. C. R." shipment, same rate, is \$7 each.

N. O. S. package weighing 1,100 pounds shipped in car lots at 39 cents per 100 is \$4.29 each. "L. C. R." shipment, same rate, is \$16.50 each.

As a matter of fact, however, the manufacturer of carriages being, as it is localized, the average mileage traveled by the individual carriage is greater than any other one article for this reason:

One concern's average is an output of 2,000 jobs per annum was 739 miles per job, and this can be taken as a fair average, and the 50 cent rate also can be taken as fair.

SPECIAL NOTICE.

To the Members of the Carriage Builders' National Association.

DEAR SIR:—The twenty-ninth annual convention of your association will be held in Music Hall, Cincinnati, Ohio, October 22, 23, and 24, 1901. The exhibition of materials used in the construction of carriages, wagons and automobiles will be held in the same hall commencing October 21 and continuing during the week.

Full details will be mailed to each member and published in the trade journals, as they are perfected.

By order of the executive committee,

DANIEL T. WILSON, *Chairman.*

HENRY C. MCLEAR, *Secretary.*

F. B. JUDKINS, *President.*

NATIONAL VEHICLE BOARD OF TRADE.

THE National Vehicle Board of Trade is a new organization, consisting of wholesale manufacturers who have formed an association for the purpose of correcting, if possible, certain abuses which have grown up and to adjust matters between carriage manufacturers and dealers by conferring with the various retail dealers' associations. Among these is a better understanding as to warranties on vehicles, regulations regarding the cancellation of orders, the matter of repairs wherein retailers furnish them when they should not, and then charge them to the manufacturers, reducing the number of finished carriage shows and other matters of vital interest alike to manufacturers and retail dealers.

The Board of Trade is not organized for arbitrary action, but for the purpose of having recognized authority to act, and by meeting with the representatives of the retail dealers' associations correct abuses which have grown up on both sides. The organization was started in Chicago early in March, and on the 28th of the month a second meeting was held in Indianapolis, Ind., and an organization effected, a constitution and by-laws adopted, and officers for the ensuing year elected.

The organization already has a membership of about fifty, and will without doubt increase until it embraces all of the wholesale manufacturers.

The objects of the National Vehicle Board of Trade:

1st.—To promote the closer relationship of wholesale and retail merchants with the manufacturers of vehicles.

2d.—To as far as lies in our power protect the legitimate vehicle dealer.

3d.—To provide ways and means under which their mutual advantage may be best subserved in giving exhibitions of finished vehicles.

4th.—To endeavor to obtain fair and just classifications of finished vehicles and rates of freight thereon.

5th.—To act on such matters as may be to the mutual interest of the merchants and manufacturers and to protect the industry in which we are engaged.

The officers of the organization are as follows: A. G. Brunzman, president; R. E. Gardner, first vice-president; H. E. Miles, second vice-president; W. H. McIntyre, secretary; W. A. Paterson, treasurer.

Directors: A. G. Brunzman, R. E. Gardner, H. E. Miles, D. M. Parry, H. C. Staver, C. A. Carlisle, Morris Woodhull, K. M. Andrews and C. E. J. McFarlan.

Executive committee: D. M. Parry, chairman; H. E. Miles and Morris Woodhull.

ARTICLE II.—MEMBERSHIP.

SECTION 1. All wholesale manufacturers of finished vehicles shall be eligible to membership. The membership shall rest in the firm and not in the individual—there being only one vote to any one firm.

All the applications for membership shall be referred to and acted upon by the executive committee, whose proceedings thereon shall be final. They shall pass upon each application separately and report the names of such persons as they have admitted to membership to the association from time to time.

SEC. 2. No person, although elected to membership, shall be deemed a member until he shall have paid his admission fee. If any person elected shall not, within thirty days after notice of his election shall have been sent to his post office address, signify his acceptance and pay his membership fee, together with the proportion of dues as indicated in Article III. he shall be deemed to have forfeited his election.

SEC. 3. Any person who from any cause shall cease to be a member

shall forfeit all his rights and interests in the property of the association.

SEC. 4. Any member guilty of misconduct and especially any member whose conduct shall be hostile to the objects and purposes of this association, or who shall violate its by-laws, may be suspended or expelled from the association by a two-thirds vote of the board of directors. No member shall be condemned without any opportunity to be heard in his defense.

ARTICLE III.

SEC. 1. The initiation fee shall be \$10, the initiation fee for 1901 being in lieu of annual dues for said year.

SEC. 2. The annual dues of members shall be \$5, payable annually, in advance. Payment of dues by members shall commence with their election, they paying a proportion of the dues corresponding to the unexpired portion of the current year, no notice being taken of the fraction of a month.

SEC. 3. No member whose dues are unpaid shall be entitled to vote. When the dues or other indebtedness of any member shall remain unpaid for sixty days after proper notice is mailed, his membership shall be declared forfeited by a vote of the board of directors, and he shall thereupon cease to be a member of the association.

ARTICLE IV.—MEETINGS.

SEC. 1.—The annual meeting of the association shall be held on the second Thursday in March each year, at 10 o'clock A. M., for the election of officers and the transaction of any other business that may come before the meeting.

SEC. 2. Special meetings of the association may be called at any time by order of the president, or upon request of five members of the board of directors. A call for a special meeting shall set forth the purpose of the meeting, and notice thereof shall be mailed to each member five days prior to the time of such meeting.

SPEEDWAY PARADE.

THE Parade Committee of the New York Road Drivers' Association have made arrangements for the main features of the parade to be held May 11. New features will be a more popular route along Seventh avenue and across the viaduct, a reviewing stand for Governor Odell, General Miles, President Clausen, of the Park Board, and others. Nathan Straus, former Mayor Gilroy, Paul Dana, and Randolph Guggenheimer, with President Kane, of the Road Drivers, in carriages, to head the procession; the participation of delegates (competing for prize banners) from out of town speedway and driving clubs, a delegation from the Hackney Club of America, the presenting of a gold medal to the mounted officer who has made the most important stoppages of runaways during the year, a special rosette for the best Speedway single and double rigs, and a special prize for the handsomest horse and trap driven by a lady. Every programme will contain a blank vote for the most popular horse and the most popular horseman on the Speedway. It is expected that not less than two thousand rigs will be in line.

CINCINNATI CARRIAGE MAKERS' CLUB.

THE regular monthly meeting of the Cincinnati Carriage Makers' Club was held at the Grand Hotel, April 11, 1901, at 6.30 P. M., with a liberal attendance of the members.

As is the usual custom, an elaborate dinner was gone through with when the regular routine work incidental to winding up the affairs of the club for the year making ready to turn over to the new or incoming officers.

Some slight changes in the by-laws were made, and reports of committees, etc., were received.

The reports of the secretary and treasurer showed the organization to be in a very flourishing condition, and at this meeting it is the custom to take up the subject of the June outing.

After the subject was fully discussed, it was decided that in view of the coming of the Carriage Builders' National Association in October that it would be a very good idea to delay the outing until that time, that the whole country might have an opportunity to participate.

W. A. Sayre, the incoming president, was introduced by the retiring president, H. M. Pollack, and he had outlined the policy of the organization for the next year and announced the committees as per attached.

Extensive preparations are being made for the C. B. N. A., and no pains will be spared to make this the banner meeting of the organization.

Entertainment: Jas. F. Taylor, chairman; L. G. Mayer, H. M. Pollock, W. T. Harvey and H. H. Nelson.

Freight and Classification: A. G. Brunsmann, chairman; G. H. DeGolyer, W. H. McCurdy, Morris Woodhull and Theo. Luth.

Labor: H. Ratterman, chairman; H. R. Liebman, Perrin P. Hunter, G. H. DeGolyer and Jos. Niehaus.

Press: M. L. Green, chairman; E. S. Bogle, J. W. Herron, Jr., Theo. Scheu and Edw. Hargrave.

Legislation: E. V. Overman, chairman; W. G. Brown, Elmer J. Hess, H. J. Robben and O. Armleder.

Insurance: Maurice Doucette, chairman; G. W. Brown, Henry Higgin, Jos. Shelt and Geo. Montieth.

AN EMPHATIC CONTRADICTION.

COLUMBUS, O., April 12, 1901.

Editor of THE HUB, New York City, N. Y.

DEAR SIR—During the past few months a report has been spread quite largely that we will discontinue business this fall, that the Big Four Railroad Co. has bought the ground, etc. We wish to emphatically deny this report, and as it has been most industriously spread by our competitors, the reason of its existence is clearly to be seen. They who started it no doubt had in mind other purposes than simply the spreading of information in circulating this report. Now, we should be supposed at least to know more about our business than they, and you have our word in the matter as against theirs.

Whenever we have to spread reports of this kind and make statements derogatory to our competitors in order to get business, we will quit the business, as life is too short.

Very truly,

BUCKEYE BUGGY CO.,
Per C. E. Jackson, manager.

MOVEMENT IN AUSTRIA AGAINST AMERICAN IMPORTS.

THE expiration of the tariff treaties of Austria-Hungary in 1902 will necessitate a general revision of the customs laws of the country. There is a strong element in Austria which views with great displeasure the increasing imports of American commodities that come into direct competition with the products of the Austrian soil or workshop. The representatives of the Austrian iron and steel industry have repeatedly demanded the imposition of higher import duties upon our iron and steel ware, and the owners of olive groves have combined with the refiners of edible oils to demand a material increase in the duty on all oils which are used as substitutes for olive oil. There is no doubt that the sole aim of the latter movement is to prohibit entirely the importation of American cotton-seed oil.

Recently, the Austrian Butchers' and Packers' Association appealed to the various chambers of commerce in the empire to join them in petitioning the Ministries of Agriculture and Commerce to prohibit the importation of American meat. The association claims that no necessity whatever exists for the importation of foreign meat stuffs, and that Austrian cattle breeding and trade are being greatly harmed by such importation. All the chambers have promised their co-operation in the proposed movement, with the exception of that of Klagenfurt. This body declares that it is not in favor of prohibitive measures, on account of the reprisals that would probably follow. It favors, however, a more thorough examination of all meats imported, declaring American methods of inspection too superficial to satisfy the European consumer.

There is certainly every indication that the new tariff laws of the monarchy will be framed with a special view to prohibiting the importation of American products, unless the manufacturers, as well as the laboring classes, enter a decided protest against such a policy—the former from fear of American retaliation; the latter because of the rise in the cost of necessities of life which would inevitably follow.

Austria buys from us much more than she sells to us, and that is perhaps the reason why a majority of her economists do not fear American retaliation. Prohibitionists in Trieste point to the fact that the total value of merchandise exported from this port to the United States in the year 1899 was only \$792,611, while direct imports from the United States during the same year amounted to \$7,876,990.

Of course, it is the agrarian element that has started, and is constantly furnishing fuel for, this agitation. Public opinion, as far at least as it is at present expressed, is certainly on the side of the prohibitionists, who, it must be remembered, are a well-organized and active body, while their opponents, however numerous, are scattered and slow to move. It may therefore not be fully realized that there is another side to this question until it comes up for a final hearing.

FREDK. W. HOSSFELD, Consul.

Trieste, February 15, 1901.

ONE SECRET OF AMERICAN SUCCESS.

THE goal toward which all successful manufacturers work is the maximum of units of product at the minimum of cost per unit. This is attained, in part, by large plants and improved machinery, and, in part, by specialization—concentration upon a single specialty.

For example, in the great shop at Mulhouse, in Alsace, employing 5,000 men, I saw water works and blowing engines, locomotives and other heavy machinery, along with cotton and spinning machinery and the lightest articles made in iron. The same range of manufacturing would, in the United States, call for half a dozen separate plants, each concentrating effort on a single product, and selling it at figures for which the Alsatian works could not dream of making it. In Great Britain, to use another illustration, an agricultural works makes road engines, threshers, mowers and reapers, and a variety of small farm tools. But when they put any one of their machines into the field, they meet a Chicago made article which is laid down on the spot at a less price than that for which the British firm can simply hope to produce it. The Chicago manufacturer builds a vast works to make nothing but mowers and binders. One concern employs thousands of men on threshing machines and road engines to haul them, while still other large factories make the cultivators, drills, etc. Machines turned out by tens of thousands, instead of thousands, can be made in greater perfection and at materially lower cost, even if all other factors are uniform. But if cheaper raw materials, more efficient labor, better management, and more up-to-date works be added, the transatlantic competitor of America is, indeed, facing a difficult proposition.—Archer Brown, in *Cassier's Magazine*.

ABUSE OF DISCOUNTS.

F. H. WOODWARD.

ONE of the flagrant abuses in trade to-day is the taking of discount on bills long after the time allowed for discount, one which, when figured in dollars and cents, would astonish manufacturers and dealers and open their eyes to one of the reasons for their lack of profit in the past few years. The manufacturer or dealer is in a great measure to blame for this abuse, as, in his zeal to increase his sales, he becomes lenient to a degree, and, believing or fearing that his competitors permit the evil, relaxes his vigilance, and his customers, finding no rebuff in their robbery, for robbery it is, grow bolder, and from a few days' over time they go to such lengths that they demand the discount on bills when goods arrive, or claim to have certain days to draw checks, or give some other plausible excuse, resenting any protest from the vender as unwarranted and uncalled for, claiming that the vender's competitors allow it.

Should you go to a bank to have a note of \$500 payable in four months discounted at 6 per cent., the interest or discount of \$10 would be deducted and you would be given the balance and would not expect any different treatment. But if you sell \$500 worth of merchandise to a customer, at four months, discount 2 per cent. ten days, and the customer takes twenty days to discount, he has robbed you of ten days' interest, and you permit it. Figure up the interest you lose by this injustice and you will realize the robbery you are suffering. The remedy lies in your own hands. Insist that, if bills are to be discounted in ten or fifteen days, or whatever time is customary in your line of business, those terms be acceded to. If customers refuse, show them in unmistakable terms the injury to yourself and their own loss of credit, for beyond doubt their credit is injured far more than they realize by their own acts and we believe the abuse will be rectified. All abuses are small at first and only become evils as they are permitted to grow. So, reform may be slow at the start, but let manufacturers and dealers take a firm stand for the principle and the abuse will be ended.

DEMAND FOR CARRIAGE MACHINERY AND HARDWARE
IN PHILIPPINES.

AMERICAN ARTICLES REQUIRED.

YOUR correspondent has found that an exceedingly good demand for carriage and wagon machinery and tools exists in the Philippines, and the major portion of the demand is for American goods. The present demand is the result of the introduction of new vehicles, the building of highways, the reconstruction of bridges and the advent of the automobile and the bicycle in the islands. For a great many years the only means which the people of the interior in most of the islands have had for transportation purposes have consisted of the drag sleds made of bamboo, which are drawn over the ground pretty much as an ordinary sled is drawn. The people in the port cities and towns, however, have done better, having had the advantage of greater facilities. The shipping from Spain and other countries has landed some modern types of vehicles at the sea ports, and



SCENE IN THE PHILIPPINES.

these are gradually finding their way to the interior. America and England are also sending vehicles here and Germany is taking a hand in it. There have been some types of carriages and wagons here from the Russian manufacturers. I also saw some from Japan. The introduction of these numerous forms of vehicles has of course opened up a good demand for supplies. Machinery is needed with which to keep the mechanism of the carriages and wagons in order. Carriage and wagon hardware of all sorts is needed. Tire setting devices are in excellent demand. In many sections of the country the wide form of tires are substituted for narrow, especially on all government wagons. There are very few tire setting machines in service here and the only ones I saw were some made from materials collected about the works. Cold tire setting machines, both for hand and power, should be supplied the agencies of the Philippines. Upright drills are also in good request. I recently saw double values paid for two worn-out upright drills for carriage and wagon repair work. Friction disk drills are in need at many shops.

It must be remembered that there are American workmen in very many of these shops of the islands and these men naturally want the machinery they are familiar with. Consequently the demand is for American machines for this reason alone. Again, it is well known that the American patterns of carriage and wagon machinery are lighter, yet stronger than the English, some of the latter patterns which are here being very clumsy and weighty. The finish on the American machines is claimed to be superior to the machines which are sent here from others nations. Evidently they employ considerable apprentice labor in some of the shops in the foreign countries.

The call for woodworking machinery for especial service in the carriage and wagon making and repairing shop is very good indeed. In fact woodworking machinery originally sent here for use in the mills of the house lumber manufacturers has been purchased by the carriage people and changed over for use at carriage work. The need of spoke and handle equalizers, wheel boring and screwing machines, wheel tenoners, hub lathes, rim boring machine spoke and handle polishers, rim packing tables, rim benders, rim planers, power feed rip saws and general machinery for making hubs, spokes, rims, shafts, single trees, neck yokes, and the like is very lively, and any carriage and wagon machinery agency here can do considerable

business catering to the need of the present manufacturers. I have been present when triple values were paid for an improved form of axle gaining machine. Boring and dowelling machines are wanted.

Band saws are greatly needed not only by the carriage and wagon people, but by other manufacturers. I have seen rims cut out tediously by hand for lack of the proper machinery. It is slow and hard work and would be expensive, only that the rates of wages paid to the native workmen are exceedingly low. Machines are wanted with combined foot and belt power. In many shops they now have steam or water power, but in some they run some of the machines by hand power, foot power or by a system of animal traction peculiar to the Philippines and according to the custom long established by the sugar mill people. Punching, shearing, tire welding, bending and forming machinery for carriage shops, wagon shops are wanted even in the remote sections of the islands, for the American troops have opened the commercial centres in every section of the archipelago and prosperity is on the march. Combined punching and shearing machines of Spanish manufacture have been sent to the islands and I have noticed some of them in service. But in most instances the machinists claim that they cannot get good work from the machines. I observed that they were worn and that several places were patched with bits of sheet metal and one place was held together by wires and rivets. The machine rattled and produced irregular work. It seems that there have been some foreign shippers of machinery sending carriage and wagon machines here of out of date pattern, and the native proprietors were expected to purchase these. The shippers forgot that many of the Filipino shop owners are the rich sugar mill men and tobacco growers of the country who employ very frequently American labor. I know that I visited a number of shops in which the workmen were partly soldiers who had been mustered out here and preferred to remain and receive the high wages which competent American machinists receive in the carriage and wagon shops of the islands. These men can judge of a machine by looking at it. Instead of the most of the machinery being passed into the hands of untrained natives, as formerly, much of it is taken in charge and critically inspected by the experienced men.

Carriage and wagon hardware is increasing in demand as time passes, for the introduction of more vehicles requires this, while the old-time custom of making hand bolts, nuts and small parts is giving way to the machine made articles. Special forging of all descriptions are in as lively request as in any carriage and wagon manufacturing centre in America. The stores of Manila and Iloilo are constantly looking for bolts and screws specially adapted for service in carriages and wagons. Carriage bolts sell upon arrival and at the sellers' prices. Rivets, wire, brass and bronze attachments, devices of all sorts are being asked for constantly.

One will notice in every shop several Filipinos with well developed muscles, who are specially engaged to hammer the metals. These fellows get extra pay, for the work is hard. Power hammers are needed and I have seen none yet on sale or in use, although some of the native shops are fitted with home-made trip hammers.

Among the small ware specially needed at the present writing are shaft couplings, king bolts, axle and saddle clips. Name plates are also in demand. This may astonish some, but the higher classes of Filipinos who ride in their carriages want it known who the owner is. They often decorate their outfits with several plates. I have noticed some of the carriages further decorated by using pieces of polished brass and other metals. The Filipinos like anything that attracts. Shaft bells are in demand. The regular sleigh bells answer all purposes. The native carriage owner attaches them to the shafts of the carriage and then as he rides through the streets all know he is coming. Saddle chimes are used when possible to get them. Body straps and plumes are paid for at any price if possible to get them. I have seen old types of mouldy and moth-eaten manufacturers' seconds sell at high values. The richer the colorings in the plumes the better. Red, yellows and greens take well here, while the sombre colors which are liked in America and some other places would hardly sell.

Coach colors, varnishes, brushes and specialties are in good request. The demand is for the elaborate colors in almost every case. There are some black coaches in service, but the Filipino mind runs to the fancy work. I have seen coaches painted in several colors. One was colored like an American flag in red and white stripes. Many of the colors which are sent to the islands are from Japan and Russia. Spain has also furnished the country with certain kinds of oils, varnishes and paints. The paints are usually shipped in quart or

larger tins, many of which swell under the influence of the tropical climate and often produce leakage. The writer has noticed very often that kegs of leads are wasting considerable valuable stuff through the warping or swelling of the staves. There should be special packages made for the Philippines. The small packages are preferred to the large, and pint packages sell freely, whereas some of the five quart packages are seldom sold, except to the persons doing a painting business on a large scale. The variety of colors needed is extensive. Reds, yellows and greens take the best, although the different hues of blues are wanted. Pinks may also be seen.

There are some varnish makers in the country now, who manufacture inferior descriptions of varnishes from the gums and saps of the trees of the forests. Large quantities of the sappy stuffs are collected and boiled down to the proper density. They are then treated with minerals and a sort of gummy varnish procured which is sticky and unsatisfactory. However, the native painters use it for both carriage painting and for general purposes. They are obliged to use much of the stuff to make any headway, and the coatings are always thick and liable to dry out and crack or scale. The colors as put on by the natives are usually streaked. The forms of brushes used are not tended to result in even coats. Often the coloring is piled on thickly and again very thin. There is considerable room here for the advent of American coach painters. As to supplies, these are much needed. Brushes and all that goes to make painting of carriages and wagons a success are in demand.

Damasks, plushes, whipcords, velours, derbys and armures are always in request by the makers of vehicles in the Philippines. There is not a power loom in the islands on which any of these textures can be made. There is an abundance of hand looms, on which inferior types of cotton cloths are woven, but there are no means by which plushes or kindred goods can be produced in the islands. Therefore the call for these goods is for the imported article. All kinds of the above mentioned fabrics are in request. Some of the dealers in dry goods carry the carriage cloths and do a good business in them, as profits are high. The variety of colors and textures which are carried is not large, and the customer has but a limited choice. Meltons, coverts, Bedford cords, kerseys, beavers and fancy black cloths are also wanted. The latter are needed for trimming the vehicles of the higher classes. The carriage linings of the middle class are mostly in colors. Cotton batting has been called for lately, as the domestic sort is not suitable. I saw some of the domestic fiber used for packing, and noticed that it hardened quickly and seemed to felt and pack, requiring the opening of the mass frequently. Reeds, spindles, cushions and back springs are among articles called for. There have been spring works started in Manila and a small shop in Iloilo is making them. But the methods employed in getting a perfect spiral form are defective and many of the springs do not fill the bill properly. I have seen high prices paid for imported springs, some of which were from the shops of America. The metals of the islands are plentiful, but as yet no effective means have been introduced for working the metal down to the proper shapes for practical service. Some of the spring makers draw the wire down to the required sizes by pulling the strands through holes in sheet metal, each hole being a little smaller in diameter than the first, thus gradually getting the wire down to the needed size. Then they wind the wire into the spiral shape over wood forms. Plated mountings, corner irons, whip sockets, dash rails and the like are also in very lively request from the artistically inclined Filipino. He wants all the plated work possible on his vehicle. I have observed some vehicles most liberally trimmed with plated devices. Often scroll work in plated device is attached to the body, while the sides are frequently decorated with numerous fancy effects. There are some plating establishments in Manila and one small place in Iloilo where the workmen are always kept busy doing the plating work for the carriage trade.

Lights of all kinds are wanted here for two reasons. First, because it is a military ruling throughout the cities and towns of the islands that all vehicles shall have one light on each side after dark. Many a carriage owner has had trouble with the guards trying to pass without lights. As a rule, at present, most of the vehicles carry lights. This has created a demand for carriage lamps and the dealers are doing quite a business in these supplies. There are a few tanneries in the islands, but the descriptions of leather turned out by them is not so suitable for carriage purposes as the imported. The tanners of the Philippines are not possessed of the proper facilities for doing good work. They have not got modern machinery. They tan the hides of the cattle, caribou and goat, and secure some substantial pieces of leather, but the processes performed are all of ancient date. The leather is hand buffed, although some of the tanners and finishers

are putting in mechanical buffing machines. Patent and enamelled carriage leather is mostly shipped here from other countries. There is some machinery here for turning out enamelled stock, but it is defective. Most of the carriages of the country are provided with tops, because of the heat of the sun. There are few open rigs.

Among some of the other materials wanted, as found by your correspondent, are drawing materials, such as carriage makers' curves, folding rules, measuring tapes, blue prints, drawing papers, drawing instruments of all kinds, for service by the draughtsmen of the carriage and wagon profession. Carriage rails are called for, also vehicle and shaft covers and back stay paper. Curtain fasteners are scarce, most of those seen by the writer being hand forged, and expensive. Roller bearing axles, storm aprons, boots, mats and matings, and carpets are requested for. As to the trade in the latter, it is lively. There are no fiber carpet makers in the islands, and the local manufacturers can furnish the carriage business only with matings made from the vegetable growths of the country. Buckram and wadding, single and two-ply, has a good call, while rubber steps are asked for. Canopy fringes, laces, tufts, etc., and, in fact, nearly everything that goes to make up modern vehicles is called for in the Philippine market. Some of the dealers already carry limited stocks of the desired goods, but the writer has found that serious shortages exist about everywhere. There is no glutted market here, to begin with, and shippers of goods will find the trade in readiness to consume articles about as fast as they are sent to the trade in the islands.

"PHILIPPINES."

THE INSTITUTE OF BRITISH CARRIAGE MANUFACTURERS.

SCHOLARSHIPS, 1901-2.

THE Institute Scholarship, £50.

The Hooper Scholarship, £50.

Tenable for one year at the Higher Technical Day Class for Road Carriage Building at the Polytechnic Carriage Building Schools, Balderton street, Oxford street, London, W., commencing Monday, September 30, 1901. General conditions:

1. The candidate must be eighteen, and no over twenty-five years of age.
2. He shall have had at least one year's experience in a carriage manufactory in the United Kingdom.
3. He shall be a British-born subject, and be resident in the United Kingdom.
- 4.* He shall have passed the examination of the City and Guilds of London Institute in road carriage building in the ordinary grade at least.
5. As attendance at the class will not occupy the whole time of the scholar, he shall bind himself to regularly attend other classes in the establishment, to be selected by the teacher of the class.
6. The scholarship may be forfeited or cancelled at any time if the holder is not regular in his attendance, fails to make satisfactory progress, does not maintain a character of steadiness, or if it shall at any time be discovered that any statement by which he has obtained the scholarship is untrue.
7. The final award of the scholarship will be made by a majority of the council present at an ordinary or special meeting, after a personal interview and examination of the most promising candidates, if found desirable.
8. The holder of either scholarship will not be permitted to hold any other scholarship at this class while enjoying its advantages.

Printed forms of application (by candidates desiring to compete for the scholarships) can be obtained by applying to Harold E. Perrin, secretary of the Institute of British Carriage Manufacturers, 30 Moorgate street, London, E. C. Application forms to be returned to the secretary of the Institute on or before 10th day of June, 1901.

By order,

HAROLD E. PERRIN, Secretary.

Secretary's office, 30 Moorgate street, London, E. C.

SUCCESS don't konsist in never makin' blunders, but in never makin' the same one twict.—*Josh Billings.*

* The tuition will be free during the time the scholar is receiving instruction under his scholarship, through a concession of the "Technical Education Board" of the London County Council.

PAN-AMERICAN EXPOSITION.

BUFFALO EXPOSITION GROUNDS ILLUSTRATED.

PORTRAITS OF THE PRESIDENTS.

Notes on the Central and South American States—Illustrations of Streets, Harbors and Transportation.



VIEW FROM THE MALL.

Transportation Building on the left, Electric Building on the right.

THE CARRIAGE AND THE AUTOMOBILE AT THE PAN-AMERICAN EXPOSITION.

THE making of an exposition is peculiar. The final form of presentation can never be foreseen; only the merest skeleton—a germ almost—can be predicted and in the evolution of this little by little the course of events, popular appreciation and demand, circumstances and conditions, each and all tend to vary the conclusions which the projectors at first had in mind. The central idea of the Pan-American Exposition—an artistic comprehension to be carried out in every detail—has from the first been present and still remains, and the popularity of the enterprise has expanded and augmented its size and made demand for space until the broad area is almost completely covered, and the expanses of lawn and garden, originally large, have given way to building after building and been finally reduced to mere spots here and there in the "Rainbow City." The result is that while what was projected about two years since could have been seen with fair thoroughness in a few days, the result of to-day will require as many weeks to absorb.

Change of condition means change of plan. Buildings designed to contain illustrations of given subjects, and which were ample under the original conditions for those subjects, could not contain repetitions to the extent asked by applying exhibitors, yet the maintenance of the original architectural and landscape effects precluded the possibility of radical enlargement and minor changes only were possible, and so in the main the picture and not the framing has been made to

conform to the changed conditions. The visible merit of the Exposition has made its success almost certain and the probability that this success will be phenomenal has brought an avalanche of demands for exhibit space—demands which aggregated many times the total floor space of the buildings wherein installation for the exhibits was desired. With hardly an exception such exhibits as were accepted were, of necessity, scaled down by a percentage ranging from 20 to 70 per cent.; and even with this scaling many exhibits had to be rejected outright. This process of scaling naturally caused some dissatisfaction which, in many instances, resulted from a lack of knowledge of the surroundings and our necessary programme, and in far more and the great majority of instances, from that tyranny of tradition which made the "has-been" accountable for the "must-be." I do not know that this condition was made more manifest in any particular line of effort than in the carriage and vehicle trade which through long years has been accustomed to exhibit on large spaces capable of containing enough jobs to be sold at the Exposition and pay a sufficient profit to, in whole or in part, defray the expenses of the exhibitor; consequently, when our prices for space became known, and when the space to show was restricted to suffice for a few jobs only and none in duplication, and when the privilege of removal of items sold during the Exposition and the substitution of other items therefor was denied, it did not seem to most of the vehicle builders that they could afford to exhibit, and they were relatively few who had the courage of their convictions and felt that this Exposition afforded advertising elements which, while differing in principle from any previously

availed of, still promised returns for the labor and expense of the exhibitor. It would have afforded me great pleasure to have been able to grant to the vehicle industry space, terms and conditions more in accord with its views and traditions, but as I have explained before, our restrictions were positive and insurmountable.

One department of the vehicle industry did not, however, seem to be affected by the same ideas and traditions, and as a result of this the horseless vehicle will be found very much in evidence, and automobiles will cover about three-quarters of the total space allotted to vehicles for street and highway transportation and this element of the Exposition seems bound to prove a great popular success—worthily such if the advance information given me by the builders shall be properly substantiated by the items exhibited.

Arrangements are being perfected for an Automobile Meet to be held at the Pan-American Exposition during the week commencing September 19 next. All prominent automobile clubs will be invited to make the run to Buffalo and be present here for that first great event of the kind ever held on this continent, and in addition to American automobile clubs we expect representatives from the great

reasonable exhaustiveness the topic—vehicles and vehicle parts. Taste is individual and not to be discussed, but I imagine most of our visitors will find the Machinery and Transportation Building the handsomest in the Pan-American Exposition; it certainly has by far the greatest floor and exhibit area and my hope is that to the initiated and the uninitiated its contents will afford pleasure, gratification and instruction and above all I desire to see its exhibitors satisfied and profited.

THOMAS M. MOORE.

EXPOSITION MUSIC.

THE music at the Pan-American Exposition will be of a superior order. Among the famous bands engaged are the following:

Seventy-fourth Regiment Band (thirty-five men), three months—May 1 to July 29.

Sixty-fifth Regiment Band (thirty-five men), three months—May 1 to July 29.

Seventy-first Regiment Band (forty-five men), four weeks—May 6 to June 1.



MACHINERY AND TRANSPORTATION BUILDING—NIGHT VIEW.

clubs in France, Germany, Belgium and England, and it is probable that a large purse, or a purse and a cup, to the value of possibly \$10,000.00, will be made a central attraction and be competed for in a long distance International Automobile Race. The time for this meet has been fixed at a date closely following after the International Yacht Races and affording just time for the run from our principal cities to Buffalo and to thus enable visitors from abroad to enjoy the yacht races and the run to Buffalo and the meet at the Pan-American Exposition. The Long Distance International Race, while the star attraction, will be but one of many, the total of which will evidence the capacity and the weaknesses of the automobile as the vehicle of pleasure and business. Every form of horseless vehicle will, under proper restrictions, be permitted to compete and to demonstrate its capacity for the particular type of work for which it was constructed. I want all of those interested in "Transportation" to know that all possible has been done for their proper accommodation and that to make available more space for items illustrating street, highway and marine transportation all of the "Railway Transportation" items were afforded space in a building especially designed and erected for their accommodation and many marine items have been installed in the "Ordnance and Munitions of War" buildings; in a word, all possible has been done to afford sufficient space wherein to illustrate with

Thirteenth Regiment Band of Hamilton (forty men), one week—June 3 to June 8.

Sousa's Band (fifty men), four weeks—June 10 to July 6.

Elgin Band (fifty men), four weeks—July 8 to August 8.

Scinta's Band (thirty-six men), four weeks—July 29 to August 24.

Carlisle Indian Band (forty men), four weeks—July 29 to August 24.

Ithaca Band (thirty-five men), one week—August 5 to August 10.

Forty-eighth Highlanders (forty men), one week—August 26 to August 31.

Robertson's Band, of Albany (forty men), one week—August 26 to August 31.

Salem Cadet Band (forty-five men), two weeks—September 2 to September 14.

Brooke's Band (forty-six men), four weeks—September 9 to October 5.

Boston Ladies' Band (thirty ladies), two weeks—September 16 to September 28.

Nineteenth Regiment Band (forty-five men), one week—September 16 to September 21.

Phinney's Band (forty-five men), three weeks—August 26 to September 15.

Victor Herbert's Orchestra (sixty men), two weeks—October 7 to October 21.

News Boys' Band of Grand Rapids—four days.



THOMAS M. MOORE.

Supt. of Machinery and Transportation, Pan-American Exposition.

No department of the great Pan-American Exposition will show to greater advantage than that of Machinery and Transportation. Here will be shown the highest art of human industry in its particular field, and when the delighted visitor stops to think in the midst of this immense aggregation, the result of practical and engineering brains, he will be surprised to learn that practically all the detail was conceived and executed by one man, Thomas M. Moore, Supt. of Machinery and Transportation. To his genius and executive ability is due its success.



PROPYLAEA AND ENTRANCE TO THE RAILWAY TRANSPORTATION BUILDING.

PAN-AMERICAN STAMPS.

In a recent number of the official Postal Guide the Third Assistant Postmaster-General gives notice that the Pan-American series of postage stamps will be ready for delivery to postmasters, "the latter part of April." These stamps were ordered by the Postmaster-General at the instance of the authorities of the Pan-American Exposition, to be held in Buffalo from May to November, 1901. These series will include six stamps, and these will be, according to the statement of Edwin C. Madden, the Third Assistant Postmaster-General, "the most artistic series ever issued from the department."

The denomination, subject, color, etc., of each stamp are officially described as follows:

- 1 cent, Lake steamer, Green, Fast Lake Navigation.
- 2 cent, Railway train, Red, Fast Express.
- 4 cent, Automobile, Red Brown, Automobile.
- 5 cent, Steel Arch Bridge, Blue, Bridge at Niagara Falls.
- 8 cent, Ship Canal Locks, Lilac, Canal locks at Sault Ste. Marie.
- 10 cent, Ocean steamship, Light Brown, fast ocean navigation.

The stamps are of uniform dimensions, .76 by 1.06 of an inch, the longer side being horizontal. The borders take the colors of the regular series on the same denominations at this date. The words "Commemorative series, 1901," and "United States of America" next below appear, above the vignette; the legend in a line next below the central opening, with the denomination in a line at the bottom, appears in the same order on all stamps of the series. All the lettering is in white Roman capitals. The numerals are all white-faced Arabic in the Roman type except the 10 cent, which is the block letter type of figure condensed to secure space for the two figures. The borders are well separated from the central pictures, and the words of denomination at the bottom are preceded on the same line by the word "Postage." All the central



THE ELECTRIC TOWER.

illustrations are from photographs as the objects represented appear to-day, and are to be printed in black.

One Cent—The lake steamer presents the port bow, the pilot house is well forward, and it is propelled by side wheels.

Two Cent—The train of four cars is drawn by a locomotive with four drivers; four parallel tracks are shown.

Four Cent—The automobile is of the closed coach order, with two men on the box and a part of the United States Capitol at Washington as a background.

Five Cent—This presents the largest single span steel bridge in the world; two trolley cars are seen upon it, and a full view of Niagara Falls is shown under, beyond and up the river, with the graceful springing arch as a frame.

Eight Cent—The great ship canal locks at Sault Ste. Marie, Mich., are given in a view from a higher point, including the immediate surroundings.



THE "BRIDGE OF SIGHS" IN "VENICE IN AMERICA."

Ten Cent—An ocean steamship of the American line, with two smokestacks and masts, presents its starboard bow lapped by a rising wave.

The Bureau of Engraving and Printing at Washington, D. C., has orders from the Post Office Department to print a special series of Pan-American Exposition stamps in the following quantities: One cent, 71,000,000; two-cent, 160,000,000; four-cent, 5,000,000; five-cent, 8,000,000; eight-cent, 3,000,000; ten-cent, 4,000,000; total, 251,000,000. The new stamps are to be printed in two colors and are said to be the most finely engraved ever issued in the United States.

MEXICO AND THE REPUBLICS OF CENTRAL AND SOUTH AMERICA.



PORTRAITS OF THE PRESIDENTS OF THE AMERICAN REPUBLICS.

Argentina.....	Julio A. Roca.	Honduras	Terencio Sierra.
Bolivia	José Manuel Pando.	Mexico	Porfirio Diaz.
Brazil	M. F. de Campos Salles.	Nicaragua	José Santos Zelaya.
Chile	Frederico Errazuris.	Paraguay	Emilio Aceval.
Colombia	M. A. Sanclemente.	Peru	Eduardo López de Romana.
Costa Rica	Rafael Iglesias.	Salvador	Tomás Regalado.
Ecuador	Eloy Alfaro.	United States	William McKinley.
Guatemala	Manuel Estrada Cabrera.	Uruguay	Juan Lindolfo Cuestas.
	Venezuela		Cipriano Castro.

SOUTH AMERICAN COMMERCE.

[FROM "REVIEW OF THE WORLD'S COMMERCE."]

THE extension of United States trade, which has been so marked in the last few years in other foreign countries, has not attained a parallel development in South America. Our exports to all South America, which were valued at \$34,700,000 in 1890, amounted to only \$37,400,000 in 1899, and to \$37,900,000 in the first eleven months of 1900. Exports to some of the countries, it is true, show an increase. We sent Argentina nearly \$5,000,000 worth in 1890, and nearly \$10,300,000 worth in the first eleven months of 1900; Ecuador also received nearly \$700,000 more in the last-named period than in the entire year 1890, the figures being \$1,428,468 and \$857,598, respectively; we also sent Peru nearly \$2,000,000 in the same period of 1900, against \$1,500,000 in the year 1890; but these gains are counterbalanced by the stationary condition of our trade with other countries, or by an actual loss in some cases. The same is true of the imports into the United States from South America, which have even sunk from \$100,000,000 in 1890 to \$91,700,000 in 1899, the figures for the first eleven months of 1900 being \$90,800,000. A few of the countries show slight gains in this line—Chile, Colombia, Ecuador, and Dutch Guiana—while from Peru the increase is noticeable, al-

though the returns have fluctuated very much in the last ten years. On the other hand, imports from Brazil, Uruguay, Venezuela, etc., have fallen off.

ARGENTINE REPUBLIC.

THE Argentine Republic extends from latitude 22° 56' S. and longitude 53° 30' to 70° W. from Greenwich. Its area is about 1,200,000 square miles. Population as per census of May 10, 1895, is 4,092,990. The country was discovered by Sebastian Cabot in 1527, and remained under Spanish rule until 1810 when a provisional government was established. After a series of political changes the present Constitution was adopted in 1853 and revised in 1860. Under it the President is elected for a term of six years and both he and the Vice President are ineligible for re-election. The following on Argentine Republic was prepared specially for THE HUB and contains much valuable and interesting information:

THE CARRIAGE TRADE OF ARGENTINA.

The Republic of Argentina, in South America, enjoys the unique distinction of being the only country in the world that possesses a horse for every inhabitant. In such countries as the United States and Russia, Australia and Uruguay, where horses are plentiful and

cheap, the percentage of horses to the thousand inhabitants is small as compared with Argentina. Thus the United States possesses in proportion to 1,000 inhabitants 198 horses; European Russia, 218 horses; Australia, 339 horses, and Uruguay, 380 horses, while Argentina leads the list with 1,063. Calculating on a basis of 1,063 to the thousand inhabitants, we find that the Argentine Republic supports in all 5,081,140 horses, the present population being 4,780,000. There are, however, many countries that exceed these figures in point of quantity of horses. For example, European Russia, with a population of 90,000,000, owns 19,630,000 horses; the United States, with a population of 75,000,000 or thereabouts, boasts 15,900,000 horses; Australia, whose population is 4,800,000, possesses 1,628,000 horses, and Germany, with 54,000,000 people, supports 3,800,000.



DRIVING PARK, BELGRANO, BUENOS AIRES, ARGENTINE REPUBLIC.

An old saying in Argentina is that even beggars ride horseback. However true this may be, it is certain that no man, if he be possessed of a few dollars, need want long for a horse. Hence the whole population rides, and the horse occupies a place in the affection of the people somewhat similar to that of the dog among the Germans.

Driving is also a favored pastime of the Argentinians. Indeed, ever since the establishment of the local carriage industry, more than sixty years ago, the horse and the carriage have proved prominent factors in the development of this greatest South American Republic. The carriage industry is practically the oldest among the present manufacturing interests of the country. Its beginning dates back to the time of Rosas. In the year 1840, the first carriage factory was erected by a Frenchman named F. Hut. Progress was, however, slow, and it was not until five years later that competition entered the market. At that time most of the traveling was done on horseback, only the so-called "diligencias" and "galeras" being used for traveling long distances inland. If a wealthy family wished to be fashionable, the paterfamilias purchased an omnibus for his wife and daughters.

The second factory was built in the year 1845 by Carlos Mathis, also a Frenchman, who carried with him from Buenos Aires to Paris a number of artisans skilled in the manufacture of all kinds of wagons and coaches. The product of this firm opened new fields of business, and soon such firms as Cabral, Luis Delomux, Fehling and Labourdette were founded. About 1880 the industry had attained considerable proportions and several large plants were in operation. A steady prosperity continued until the year 1890, when a boom raised the industry to a front rank among the best money making lines in the Republic. Notwithstanding the large demand, however, overproduction followed the expanded output, and a crisis ensued from which many manufacturers have not yet fully recovered. Coupled to this injury to the trade is now the eight hour day which the workers in carriages succeeded some time ago in obtaining after long and strenuous battle. Previous to the new ruling, the Argentine work day for this class of goods was ten hours, hence the loss considering the general indolence of South American labor, and the climatic conditions unfavorable to foreigners is appreciably felt. Still another point of complaint of the local industry is based on the import tariff, which is regarded as unsatisfactory, in that it fails to place sufficiently serious obstacles in the way of imported vehicles to discourage the attention of makers in Europe and the United States.

Nevertheless, in spite of the unfavorable conditions against which Argentine manufacturers claim to have to contend, the carriage and wagon industry is on an exceedingly firm footing, as witnessed by the fact that there are at present in the Republic, in actual operation, more than 120 factories. Eighty of these concerns are located in and about the city of Buenos Aires. Of the latter six of the largest

boast of a combined capital of \$1,000,000 while the remaining 75 represent another million. The balance of the 120 factories are scattered throughout the interior, some being of high standing and fairly large capital, and others small and insignificant.

The seat of the carriage and wagon, as of all other large industries, is Buenos Aires. This city is a perfect beehive of bustle and activity. Altogether it lays claim to about 1,165 factories of various descriptions, among them being liquor factories to the number of 184, 85 mechanic workshops, 23 tobacco factories, 47 hat factories, 60 roundries, 11 distilleries, 132 furniture makers, 34 mills, 20 beet sugar mills, 25 tanneries and 7 chocolate factories. The number of hands employed in the factories is some 130,000, and the capital amounts to \$108,000,000 paper (\$54,000,000 gold.)

In carriage building interests alone, more than 3,000 workmen find employment. This is a decrease during the past ten years of more than 3,000, the crisis following the boom having found between 6,000 and 7,000 workmen employed in the carriage making. Wages have also decreased to some extent; at present these vary between £1 and £3½, while skilled artisans brought especially from Europe are paid somewhat higher.

The present average production of carriages in Buenos Aires amounts approximately to 2,000 conveyances per annum. Taking \$600 as the average price for a vehicle, the industry produces yearly from \$1,200,000 to \$1,500,000—an extremely creditable showing for a South American city.

The majority of the carriage manufacturers of Buenos Aires are Italians and Frenchmen, who emigrated to South America many years ago, and have since played an important part in the development of Argentina. Italians in particular are in possession of large business interests in the Republic. In fact, out of a total population of 600,000, 200,000 of the residents of Buenos Aires are of Italian nationality. This is directly explainable by the fact that the climate of Argentina is very similar to Italy, and those Italians who have been forced out of their Heimat, either by exile or by love of liberty, have found opportunities galore in this prosperous South American Republic. A number of large factories are also in the hands of Germans, large numbers of whom have emigrated to South America and there settled for life.

An odd state of affairs connected with this possession of the carriage trade by the various nationalities is noticeable in the fact that every manufacturer buys his parts in the country of his birth. Thus, until quite recently, it would have been difficult to find an Italian manufacturer who did not purchase his axles, varnish, springs, etc., in Italy, or a French builder whose patronage was distributed elsewhere than in France. Of late years, however, less attention has been paid to patriotism and more to prices, with the result that the trade now purchases where prices are most satisfactory.



GRAND STAND, BUENOS AIRES JOCKEY CLUB, ARGENTINE REPUBLIC.

The annual importation of carriages and axles into Argentina has during the past three years a mean average of \$50,000 and \$40,000 respectively. Of finished carriages perhaps the chief part has been supplied by the United States, with France second, Belgium third and Italy fourth. In axles, on the other hand, Great Britain shows predominance with Belgium second. In the year 1899 England alone sent carriage axles to Argentina to the value of \$31,000, while during the half year of 1900 her export amounted to \$17,483.

Argentina's import trade in varnishes is also interesting at this point. Argentina, it should be stated, is the most important market for varnishes, especially for carriage purposes, in South America. It has practically no home production worthy of mention, and is

consequently obliged to rely almost entirely upon an importation for its supplies. Almost all the better grades of varnish for the carriage industry are imported, such firms as Nobles & Hoare and Wilkinson, Heywood & Clark of England, furnishing large quantities. The annual consumption of imported varnishes in Argentina approximates between \$180,000 and \$190,000. In 1898 the imports were \$190,640, as against \$183,404 in 1899, and \$93,677 during the first six months of 1900.

An idea of the actual distribution of this trade may be gathered from the statistics for 1898, which show that in that year Great Britain sent varnishes to Argentina to the value of \$154,752, while Germany contributed \$10,000 worth, the United States \$12,048, Belgium \$8,469, France \$2,910 and Italy \$2,461. As may be seen England supplies more than three-quarters of the total amount.

As already remarked, the seat of the carriage industry, as well as of all the other important industries of the Republic, is Buenos Aires. This city is the Paris of South America. It is wealthy, beautiful, fashionable and modern. As a money centre it is the New



STREET SCENE IN BUENOS AIRES, ARGENTINE REPUBLIC.

York of the south. All of the imports into the Republic, amounting at present to \$120,000,000, pass over its spacious quays, and all of the exports, exceeding \$140,000,000 per annum, flow into the ships in its harbors, while the \$260,000,000 thus created pass through Buenos Aires banks.

The city is lighted by electricity, and electric street car lines intersect the streets and connect the capital with towns as far as forty and seventy miles inland. Shops vie in tastefulness and excellence with those of London, Paris, Berlin and Vienna, and the churches (Catholicism is the prevailing religion) compare favorably with the ancient religious edifices of Spain and Italy.

Buenos Aires is also the residence city of the merchant and cattle princes of the Republic, the millionaires of South America. This class live on a style of magnificence not surpassed by the aristocracy of any other country. Their residences are furnished lavishly throughout on plans designed by architects brought over from France for this especial purpose, and their stables are among the finest in the world. That this latter statement is not exaggerated is amply attested by the fact that on almost any weekday afternoon from two to three thousand carriages containing the aristocracy of the land may be seen promenading in the park, "Palermo," a spacious park land located in the suburbs of Buenos Aires. Our accompanying photograph is a faithful reproduction of an afternoon scene in Palermo.

Naturally, where there is so large a moneyed leisure class and a strong love of horse flesh, horse racing flourishes. This is the case in Argentina. Buenos Aires is the possessor of a full fledged racing organization, known as the "Jockey Club," and a good race track. On this track in 1899 six hundred and ninety races were run, in which 6,285 horses won prizes, amounting to \$1,643,390. Altogether in this year 176,000 entries were made, and over \$9,000,000 in gold changed hands as a result of liberal betting. These figures speak for themselves.

The racing stables are conducted on the most up-to-date lines, the most of them being in charge of trainers secured in England, who are offered sufficient inducements to cause them to settle in South America for life. The headquarters of the Jockey Club are located in Buenos Aires in a handsome building of that name, the interior of which is fitted up in a manner worthy of a king's home. Here the racing men and Buenos Aires "swells" congregate to register bets and spend in lavish dinners and entertainments much of their race track gains.

Indeed, racing in Argentina has become one of the most fashionable methods of entertainment. On big race days the stands and grounds roundabout the tracks are packed with a mass of color, made up of brilliant parasols and ladies' headgear. Four-in-hands with their freight of charming senoras and señoritas dot the course, and render an Argentina racing scene an event long to be remembered.

A curious use to which vehicles are put in Argentina is noticeable along the quays and the banks of the harbor of Buenos Aires. The water of the harbor at low tide is rather shallow, and should a ship not be able to approach sufficiently near to the docks to discharge its passengers, carts with immense wheels eight or ten feet in height are driven out in the shallow water to the ship. The passengers descend the gang-plank to these odd looking lighters and the procession of carts starts toward the shore. It is one of the most unique sights imaginable to see a string of carts approaching the shore, after having traveled often more than half a mile from the ship. The heavy, muscular animals make slow but steady progress, and land the passengers safe and dry, after probably the most novel ride they have ever taken.

In closing, mention of the growing imports of American carriages should not be omitted. These amounted in 1898 to about \$32,000. Since then a steady growth has taken place. The American carriage has attained an excellent reputation for lightness, solidity and finish, which is gradually engendering popularity among the wealthy classes. Already numerous carriages of American make may be seen in the parks and on the streets of Buenos Aires, their original design and artistic finish stamping their origin as clearly as name plates. The beginning thus secured should not be allowed to wane, for Argentina is a market deserving of careful attention on the part of American manufacturers. Unfortunately the United States has heretofore paid too little attention to the market, and the Germans, British and Belgians have reaped the benefit of American laxity. How true this is may be gathered from the fact that during the first nine months of 1900 out of a total import trade of \$87,000,000 in gold Great Britain furnished \$30,000,000, Germany \$12,000,000, the United States \$11,000,000, while other European countries divided the balance.

IMPORTS AND EXPORTS.

According to a report from Consul Mayer, of Buenos Ayres, the imports of the Argentine Republic in 1899 were valued at \$116,850,700 and the exports at \$184,917,500. Trade with the principal countries was as follows:

Countries.	Imports.	Exports.
Germany	\$12,979,900	\$29,433,700
Belgium	9,410,500	24,478,400
Brazil	4,806,100	7,041,700
Spain	3,197,900	1,765,400
United States.....	15,466,800	7,667,500
France	383,000	41,446,700
Italy	13,780,100	4,926,600
United Kingdom	43,671,400	21,721,600

Imports from the United States increased during the year by over \$4,000,000. We now stand second among nations exporting to Argentina, while three years ago we ranked fourth. In the first nine months of 1900, however, there was a decrease in imports from our country, the trade of which is hampered by the lack of direct steamship facilities. There is, nevertheless, a growing demand for our products in the Argentine Republic.

Minister Lord sends the following figures, showing details of the trade in 1900:

Imports and exports.	January. 1899.	September. 1900.
Imports	\$87,670,936	\$87,461,371
Exports	117,617,798	122,518,293
Total	\$205,288,734	\$209,979,664

Mr. Lord adds:

The decrease of imports was \$209,565 and the increase of exports \$4,900,495, or a net increase in the foreign commerce of the Argentine Republic of \$4,690,930 in the first nine months of this year as compared with the first nine months of the year 1899.

The noticeable features of these returns are a decrease of imports from the United Kingdom and the United States, and a sensible decrease from Germany and Italy. The increase of imports from Italy is due to the large population here who consume her products; but Germany's increase over the United Kingdom indicates an inroad upon British trade, as these imports are of a similar character.

BOLIVIA.

THE Republic of Bolivia is an inland country having no ocean front. Its area is 597,271 square miles; population, about 2,500,000. The President is elected by direct universal suffrage for a term of four years. The legislative power is vested in a Senate and Chamber of Deputies, also elected by universal suffrage. The country is rich in mineral wealth, which is but imperfectly developed. There is also a large area of fertile lands watered by great rivers. The great diversity of climate makes it possible to produce a great variety of crops, while mountain sides and plains afford vast ranges for sheep and cattle. The forests are rich in valuable woods, and in rubber trees. The imports from the United States are small and mostly in the hands of the Germans. They have branch houses at all principal commercial points. The German houses are all managed by Germans, who speak Spanish fluently, the latter being absolutely indispensable, as is also a residence among the people. The imports of carriages and wagons must be light, as no special mention is made of them.

BOLIVIA.

Bolivia having no seaports, trade passes through Arica, Mollendo, Antofagasta, and the river ports of Puerto Suarez and Villa Bella. In 1899 a new Bolivian port, named Puerto Alonzo, with a custom house, was opened on the river Acre, which flows into the Purus, a tributary of the Amazon. No later statements of general trade are available than those for the year 1897, when the imports were stated at \$11,000,000, and the exports at \$10,400,000. United States exports to Bolivia in 1899, according to our Treasury returns, are stated at \$27,000. There is no record of imports from Bolivia. Germany exported to Bolivia in 1899, \$666,400 worth; France, \$6,948; Spain, \$1,647. Imports from Bolivia into the same countries were: Germany, \$1,356,600; France, \$25,700; Spain, \$7,200. The chief imports into Bolivia are provisions, hardware, wines and spirits, cotton, woolen and silk goods, and clothing. Exports include silver, tin, bismuth, copper, rubber, wool, hides, gold, coffee, cocoa, and cinchona. The import trade is largely in the hands of the Germans. A writer in the *Board of Trade Journal*, London, August 2, 1900, says:

The progress of German commerce in Bolivia has been such during the last twelve years that of the total European imports into Bolivia, Germany claims five-eighths. The means by which this result has been obtained are set forth as follows: (1) The low cost of German articles offers great advantages to buyers who are not very particular as to quality, especially if they are, as in Bolivia, obliged by shortness of capital and by the diminished value of their silver coins to buy in the cheapest markets; (2) after the war of 1870 emigration from Germany greatly increased. The majority of the emigrants are intelligent manufacturers and traders. Protected by their government, they settle in the country, study the needs of the towns where they are established, send samples home of everything that is bought in the place, and in this manner they capture the market. The German government protects the commercial interests of its subjects, and assists and encourages good steamship services. On the Pacific, for example, Germany, by means of two very prosperous lines, competes favorably with English shipping. This special protection, however, is not at all apparent in Bolivia. No commercial treaty has been concluded with Bolivia, nor is Germany directly represented in Bolivia. German consuls are simply agents who receive no remuneration for their services, and no official mission for studying the means of developing German commerce has been intrusted to any person there. There are at present in Bolivia twenty German firms of the first rank, only one English (or rather Anglo-Chilean), and only one French. There are, however, a few Italian and Spanish firms. A peculiarity of retail trade in Bolivia is that, owing to the great distance which often separates the mines and gum warehouses from the markets, the owners frequently carry on a retail business for the supply to their employees and families of almost every article of retail trade. The workman has a current account at these stores, where articles are supplied to him on credit at exorbitant prices, and in isolated regions employers charge their workmen fabulous sums for articles of prime necessity.

The *Nachrichten für Handel und Industrie*, Berlin, says that, according to a communication from the French agent in La Paz, the Bolivian government has appropriated, in the budget of the current year, 120,000 bolivars (\$51,240) for the preliminary studies of three railway lines, viz., from Oruro to La Paz and Lake Titicaca, from Oruro to Cochabamba, and from Challapata to Colquechaca. A further sum of \$21,350 will be appropriated for the surveys of a railway from Potosi to the Argentine boundary.

BRAZIL.

THE Republic of Brazil is by far the largest of the South American Republics, having an area of 3,261,000 square miles and a population of 16,330,216 (in 1897) and has a sea coast of about 4,000 miles. It has been a Republic since 1889. Its great product is coffee, of which it furnishes more than one-half of the entire world's consumption. Sugar is another of its great products, while the Amazon section is the great center of rubber industry. Minerals of all kinds abound from "diamond to coal." The vast forests abound in timber suitable for all manufacturing and building purposes. The United States imports from Brazil, according to latest reliable statistics, about one-half of the imports from the country, the amount being \$76,008,364, while Brazil takes but \$12,388,124 of United States



U. S. DIAGRAM, SHOWING PAN-AMERICAN STATES AND COMMODITIES WANTED FROM THE UNITED STATES.

products. Great Britain sends about \$40,000,000 and takes from Brazil less than \$23,000,000. As carriages, street cars and cars for steam railroads are all classed under one head the value of carriages sent to Brazil from this country cannot be determined by any of the published statistics. The tariff rates are high and the laws so complex that the American manufacturer has little inducement to cultivate direct trade with Brazil. The long credits given by European houses gives them a control of the market. Then, too, it is

claimed that American shippers do not pack their goods as well as those of other countries. The great extent of Brazil, its multiplicity of wants, and its limited manufactures invite the American manufacturer; but great changes are necessary on the part of our people in order to capture a fair share of the trade of this great South American Republic.

The value of the imports in 1898 was \$105,393,000 and of the exports \$124,770,900. Trade (apart from that in South America) is transacted chiefly with Great Britain, the United States, Germany, France, and Spain, and the official returns of each of these countries show that the traffic with Brazil in 1899 was as follows:

Countries.	Imports from Brazil.	Exports to Brazil.
United States	\$59,580,900	\$11,454,000
Great Britain	19,270,400	26,412,700
Germany	23,632,900	11,363,900
France	26,402,400	20,361,500
Spain	436,700	452,800
Belgium	2,120,100	10,038,900

Consul-General Seeger, of Rio de Janeiro, says:

The results of both the import and export trade in 1899 were unsatisfactory—the commercial crisis is as severe as ever. The very considerable decline in the custom house receipts show (1) that through their constant increase the import duties have reached the point where they act prohibitively on the import trade, and (2) that the purchasing power of the people has seriously decreased, especially in so far as the coffee States are concerned.

The collection of 10 per cent. of the customs duties in gold, inaugurated on January 1, 1899, was equivalent to an increase of 35 per cent. Since the 1st of January, 1900, 15 per cent. of the duties are payable in gold, an increase of over 50 per cent. in one year, and this in a declining market at a time of commercial stagnation.

The United States occupies the sixth rank in imports into Brazil, while we buy more of Brazil's staples—coffee and rubber—than all Europe combined.

Before the revolution, over fifty years ago, the State of Rio Grande do Sul was a wheat-exporting State. That State enjoys now a stable government; industries are being established, railroads built, agriculture revived, and in less than ten years Rio Grande do Sul, as well as the other southern States, will likely furnish the bulk of cereals and meat products consumed in Brazil. Fortunately, the quality of United States flour is such that a considerable quantity of it will always find a market here. I am told by an expert that for certain grades of bakery products American flour is indispensable, and that Brazilian bakers find it very advantageous to mix American flour with the Brazilian and Argentine product, even when the latter is much lower in price.

Consul Furniss, of Bahia, explains that the business of the country is suffering through the fluctuation in exchange, which weighs especially upon the import trade. The consul gives valuable information for commercial travelers in Brazil. The outlook for the new year, he says, is better than it has been in the past.

Commercial interests of the United States, says Consul Gunsaulus, of Pernambuco, are hampered by the fact that all the railroad and banking institutions, as well as many other large enterprises, are controlled by capitalists from other countries. Concerns of this kind under American management would not only offer employment to young business men, as is the case with the English and Germans, but would open numerous avenues for the increase of trade with the United States. The present commerce between our country and Brazil justifies the establishment of at least one good American line of passenger and freight steamers. We cannot hope for a fair proportion of foreign trade without adequate means of transportation. Our commerce has been steadily increasing in spite of these drawbacks, and, with proper efforts, can be made to reach flattering proportions. There is a market for watches and jewelry, pianos, kodaks, revolvers, iron and brass bedsteads, brass cocks and plumbing supplies, machines for making wire nails, locomotives for sugar plantations, machines and tools for tanners, shoes, etc. Our butter is just beginning to be introduced, and the prospects for a large trade are promising. Our product is displacing the French. We also furnish the bulk of the flour brought into the market. Hundreds of bicycles, nearly all of American manufacture, are in use in the city and suburbs. A flourishing trade in our coal would seem to be assured.

INVOICES TO BE CERTIFIED.

According to an order of the government, as published in the *Gazeta Oficial* of October 20, 1900, all invoices for goods shipped to Brazil will, from December 9, 1900, have to be certified by a Brazilian Consul residing in the town or province from which the goods are sent. The *Bulletin Commercial* of Brussels says that the application of the measure demanding consular invoices for imports of merchandise destined to the United States of Brazil has been postponed from December 9 to January 1, 1901.

RUBBER CONCESSION.

Consul Kenneday writes from Para that he is informed that the state of Amazonas, desiring to develop the rubber trade in that section, offers a reduction of 10 or 15 per cent. of the export duties on rubber, and permission to cut and pack in its own bonded stores to a syndicate that will take charge of the trade; the price to be paid for this concession being \$2,000,000.

COMMERCIAL TRAVELERS' LICENSES.

Vice Consul General Lowrie reports from Rio de Janeiro, January 16, 1901: Commercial travelers in Brazil are required by State and town laws to take out licenses for the transaction of business. Heavy fines are imposed for a failure to comply with the regulations, and the police are authorized to arrest any such traveler found without the requisite permit. The charges in different States and cities are as follows:

STATES AND CITIES.	CHARGE.	
STATES:	Milreis.*	
Rio Grande do Sul.....	300	\$60
Bahia	1,000	200
Pernambuco.....	200	40
Sao Paulo	None.	
Santa Catharina	200	40
CITIES:		
Para (annual payment)	1,000	200
Manaos.....	300 to 500	\$60 to 100
Ceara.....	270	54
Maceio	150 to 300	30 to 60
Sao Paulo.....	None.	
Rio de Janeiro.....	None.	

* One milreis paper now equals about 20 cents.

CHILE.

THE Republic of Chile extends along the west coast of South America to the most southern point of the continent, its length being 2,600 miles; its breadth from 50 to 200 miles, having an area of 293,970 square miles, with a population of 3,000,000. The legislative body consists of a Senate and Chamber of Deputies. The President is elected for five years, the Senators for six years and the Deputies for three years. The principal pursuit is agriculture, which engages about one-half of the population. Wheat is the leading staple, although most other cereals are grown, besides fruits and vegetables. Sheep and goats are also a source of wealth. The most important mineral product is nitrate of soda, the product of a single year amounting to over 1,000,000 tons. Copper, gold, silver and other metals exist. Manufactures are at a low state, although the Government is offering inducements for the establishing of various industries. As it now is Chile imports the bulk of the manufactured goods consumed by her people. Great Britain leads all other nations in the values of the Chilean imports and exports. The United States ranks fourth. Carriages, wagons, carts, varnish, paints, wheels, axles, saddles and harness figure to a greater or less extent among the imports from the United States. The value of the foreign products consumed in the year 1894 and 1895 was \$37,411,663. The exports from Chile for 1895 were valued at \$55,419,997. It is claimed that our people do not pack their goods as well as do those of other countries and much of our lack of trade can be charged to that cause.

COMMITTEE OF THE PORT OF VALPARAISO.

The Chilean Minister of Finance has issued a decree establishing a committee of the Port of Valparaiso to consist of the Intendente of Valparaiso as president, the Administrator of the Customs, the Director of the Maritime Territory of the Republic, the Maritime Governor of Valparaiso, four merchants nominated by the Chamber of Commerce from among the shipowners or agents and consignees of steamship companies, one delegate elected by the municipality, and a hydraulic engineer appointed by the government. This committee is charged with the duty of suggesting and superintending maritime works which will add to the safety and convenience of the shipping visiting the port. It will also draft and propose to the government laws and regulations tending to meet the requirements of the commerce of the port and improve the arrangements and carrying on of the maritime works. The committee will also suggest each year the new works required to be effected, with the estimates of their cost.

The manner in which the money voted by the government to meet these estimates is said to be laid out and the control of the works during their construction are intrusted to the committee. The dredging of the bay, the lights, signals, buoys, etc., are placed under the care of this new body.

Consul Caples, of Valparaiso, says that the imports into Chile in the year 1899 were figured at \$38,785,031, a gain of \$1,459,380 over 1898. The value of the export trade for 1899 is estimated at \$59,533,690, a decrease of \$1,811,604 compared with 1898. The following table gives the principal exports in 1899:

Saltpeter and other mining products.....	\$50,237,500
Agricultural products	3,868,200
Manufactured goods	1,409,700
Wine, liquor and alcohol.....	119,900
Animals and animal refuse.....	1,843,300
Coin	947,400

The trade by countries was:

Countries.	Imports.	Exports.
Great Britain	\$16,183,400	\$40,342,900
Germany	10,858,300	7,636,500
France	2,016,700	3,407,000
United States	3,002,100	2,682,700
Peru	1,892,600	1,550,600
Argentina	798,000	111,300
Brazil	648,800	68,000
Ecuador	564,600	198,800
Italy	560,800	317,500
Uruguay	487,500	302,600

Consul Caples notes a falling off in some lines of imports from the United States, due in part to the Chilean tariff. Orders for agricultural machinery in 1900, however, will exceed those of any preceding year. There is considerable complaint, he adds, of United States methods of packing goods; the packages are also not clearly marked.

COLOMBIA.

THE Republic of Colombia at the northwestern corner of the South American continent has an area of 504,773 square miles and 3,878,600 inhabitants. The President is elected for a term of six years. Legislative power is vested in a Senate, composed of three representatives from each of the nine departments, and a House of Representatives composed of members elected by universal suffrage, one member to every 50,000 inhabitants. The country is rich in minerals. The forests contain an almost unlimited supply of valuable timbers. The agricultural products are wheat, oats, barley, coffee and other tropical fruits. Manufacturing is in a backward state, but covers quite a range of products. Great Britain holds the first place in commercial relations, the United States the second. Among the imports from the United States are carriages, street cars and cars for steam railways, the declared value of each being small. The trade with the United States, however, shows a healthy increase. Commercial credits act in a measure against our country, as European countries accord six to nine months' credit, while the United States sells on sixty to ninety days. Carriages figure as a small item, but there is quite a trade in heavy wagons. The Panama Railroad is the connecting link between the Pacific and Atlantic oceans. The Panama Canal, if completed, will form a continuous waterway between the oceans.

IMPORTS AND EXPORTS.

Imports in 1898 (no later statistics obtainable) were stated in the "Statesman's Yearbook," 1900, at \$11,083,000, and exports at \$19,157,800, of which \$5,305,900 went to the United States. There is no statement of imports from the United States, but our Treasury returns show that in 1899, exports to Colombia were valued at \$2,985,800. The principal imports are, in the order of importance: Metals, iron goods, food stuffs, beverages, cottons, illuminants, drugs, paper, and linens. Exports comprise coffee, timber, tobacco, vegetable products, animals, hides, minerals, rubber, etc. England took \$4,816,400 worth of the exports in 1898; France, \$3,371,800; Germany, \$3,079,900. Vice-Consul-General Gudger, of Panama, says that trade has suffered in 1900, owing to political conditions. Statistics are not at present available, but he estimates that both the imports and exports have fallen off some 25 per cent. The transit trade across the Isthmus, however, has equaled that of preceding years. Imports in 1899, he says, showed an increase over 1898, about 50 per cent. of which was credited to the United States and some 40 per cent. to England. Cotton goods and provisions are among the imports from our country which showed a gain.

EXPORT TAX ON COLOMBIAN PRODUCTS.

CONSUL INGERSOLL, of Cartagena, informs the Department, February 23, 1901, that the Colombian government has issued a decree fixing export duties * upon certain products of that country. The decree, which takes effect March 1, 1901, applies to the following articles, among which are: Rubber, crude, per 100 pounds, \$5; hides—cattle, per 100 pounds, \$3; other, per 100 pounds, \$4; ivory nuts, per 100 pounds, \$1.

COSTA RICA.

THE Republic of Costa Rica is situated at the extreme southern part of Central America. It has an area of about 23,000 square miles; population in 1897, 294,941. The President is elected for a term of four years by the Chamber of Representatives, the latter being the legislative power, members being elected by voters possessing the requisite qualifications, for a term of four years. The country is traversed by a chain of mountains running from the northwest to the southwest. The slopes of the mountains and the valleys are very fertile and constitute the most populous parts of the country. The United States Commissioners to Central and South America in 1885 said: "It would be impossible to find another country in the world where, in such a relatively small territory, exists such a quantity of first class lands, combined with a wealth of woods and minerals." Manufacturing has made considerable progress, but the wealth of the country is in its minerals and agricultural products. The country's exports exceed its imports. Of the imports the United States has better than 38 per cent. Very few carriages are sent there, but wagons are sold more freely. The present conditions warrant a belief that this country will greatly increase its trade with Costa Rica in the near future.

ECUADOR.

THE Republic of Ecuador, so called because the equator traverses the northern part of its territory, has an area of 122,580 square miles and a population of 1,270,000. The President is elected by the people for a term of four years. The legislative power is vested in two houses. The Senate consists of two Senators from each of



WATER CARRIER, ECUADOR.



MOUNTAIN EXPRESS.

the sixteen departments, and the Deputies, one member to every 30,000 inhabitants, all elective, the Senators for a term of four years and the Deputies for a term of two years. Ecuador is rich in gold, silver, copper, iron and lead. Coal also abounds. The forests contain many rich and valuable timbers, rubber trees, etc. The agricultural products consist of those natural to the tropics and many of the temperate zone. The manufacturing industries are few, mainly in sugar, flour and saw-mills, tanneries, distilleries and cot-

* Payable in national paper currency. The value of the paper currency, according to a report of November, 1900 (see Commercial Relations, 1900, Vol. I., about to be issued), was \$1 paper is equal to 10 cents gold.

ton fabrics. The commerce of the country is on the increase. Great Britain leads in the exports to that country, the United States standing second, while France is the largest buyer of Ecuador's products. Carriage and wagon trade is very light. Internal transportation is in a backward state, being mainly by mules. The only carriage road in the Republic outside of the cities is from Ambato to Quito, 60 to 70 miles. Long credits given by Europeans operate against trade with the United States, and it is also claimed that our shippers do not pack as well or as economically as the Europeans. All duties are on the gross weight and because of that everything should be packed as light as possible. At the same time the article must be well protected. With proper care there seems to be a good field for many of our manufactured goods in Ecuador.

EXPORTS AND IMPORTS.

Consul-General De Leon, of Guayaquil, gives the exports from Ecuador for 1899, as \$8,151,700. The value of imports, he says, cannot be given, as the records of the custom house have been destroyed by fire. Imports for the first six months of 1900, however, were \$2,737,600, of which the United States sent about 22 per cent. Flour, lard, lumber, oil, machinery, and wire constitute the bulk of our exports to Ecuador. The principal exports from Ecuador are cocoa, rubber, ivory nut, coffee, hides, straw hats, and tobacco. Cocoa represents three-fourths of the total value. About one-third of the exports go to France, some \$1,600,000 to Germany, about \$1,000,000 to England, \$1,300,000 to the United States, etc. The gold standard went into operation November 1, 1900. Labor has been imported from Jamaica for the Guayaquil and Quito Railway, and appearances indicate the completion of this undertaking.

WHARF CONCESSION AT GUAYAQUIL.

Vice Consul General Reinberg, of Guayaquil, under date of February 18, 1901, transmits copy and translation of a concession of the Ecuadorian government for the construction of a wharf at Guayaquil, which is summarized as follows:

"The wharf is to be 1,500 feet long; it must be made of iron, wooden floored, with steel joists, and roofed with grooved iron. The foundations must be solid. The wharf must have appliances which will enable it to discharge 1,500 tons of freight in twelve hours. It must be traversed its entire length by a railway connecting store rooms, offices, etc. All materials and machinery for construction are exempt from entrance duty. The wharf must be completed within three years from date of contract; in case of unavoidable delay, the government will concede an extension of time. For each year of delay, the contractors (Martin Reinberg & Co.) will forfeit to the government \$100,000 per annum. The maximum capital of the company will be \$937,300. The free use of the river banks is granted, and the wharf shall be constructed in accordance with modern systems adaptable to the character of the Guayas River. During a period of thirty-three years, the contractors are authorized to collect 6 per cent. of import duties for wharfage, except on articles imported for the use of the government; also, 2 sucres (94 cents per ton for removal to custom-house; the first tax to be paid by the captain or consignee, the latter by parties presenting manifests to customs. Boats loaded exclusively with salt, coal, lumber, rails, or machinery will be free from the second tax. All ships arriving from or clearing for foreign ports are obliged to load and unload at the wharf. The government retains the privilege of handling the coasting trade at the present wharf. Any difference arising between the government and the contractors will be adjusted by arbitration, subject to the laws of the country.

GUATEMALA.

THE Republic of Guatemala is the most northern of the Central American states, and the most populous. Its area is calculated to be 47,810 square miles; its population, 1,364,678. The President is elected to serve a term of six years and the National Assembly for a term of four years. The Republic's chief source of wealth is its agriculture, although its mineral wealth is great, but not well developed. Coffee is the great crop, a very large section of the country being well adapted to its growth. Sugar cane is cultivated advantageously, as are also Indian corn, wheat and rice. Cattle raising is also a source of wealth, as the lands are suitable for that purpose. Manufactures are at a low ebb, although this Government encourages enterprises of every character. The latest official tables of imports places them at \$3,464,537.10, of which the United States furnished \$1,278,767.63. Carriages and wagons were imported to the

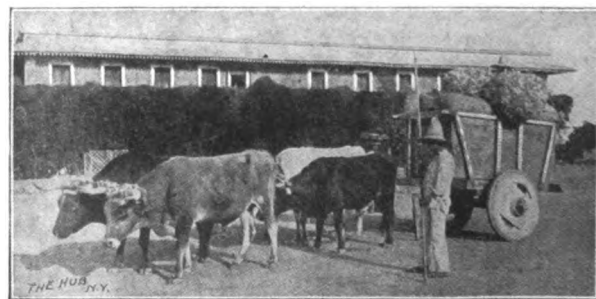
amount of \$16,566.96. Wagons being on the free list, United States consuls call the attention of shippers to the importance of careful packing, as all goods are roughly handled. Freight by the way of Panama has to be handled four times en route, and on its arrival at the port of entry in Guatemala is again discharged from the ship into lighters of 20 tons capacity and conveyed to the iron piers, when it is hoisted 20 to 25 feet and placed on cars and run to the custom house. The principal cities of each department are connected with each other, the capital and ports by means of wagon and stage roads. These roads are kept in order by each male inhabitant contributing \$2 or four days' work. As horses are raised in large numbers it would seem that Guatemala offered an opening for American carriages and wagons.

HONDURAS.

THE Republic of Honduras borders on the Caribbean Sea, having about 350 miles' frontage. It has an area of 45,000 square miles and a population of 331,917, mostly mixed blood. By the constitution of 1880 legislative power is vested in a Congress of Deputies of thirty-seven members. The executive authority is vested in the President, who is elected for a term of four years. The soil and climate are well adapted to the growing of tropical fruits and many of the grains of the temperate zone, but lack of transportation prevents any material development. The forests are the principal source of wealth, as they abound in valuable trees, notably the mahogany. The country is also rich in minerals, but their development is slow. The roads are poor, mostly cart roads, and mule trails. The cart roads are for the most part rough with many steep ascents and descents. Those built by the Government are supposed to be four yards' wide, except where cut through rocks, when they are but two yards wide. Owing to these conditions the transportation is mostly by mule, the traveler providing his own food and food for the attendant and animal. The little done in the vehicle line is confined to carts for transportation purposes.

MEXICO.

THE Republic of Mexico, which adjoins the United States on the south, has a total area of 767,226 square miles, and a population in 1895 of 12,270,195. The city of Mexico is the largest and most important in the Republic, being the capital and the center of political, social and commercial power. It had in 1897 a population of 339,935. Under the policy of President Porfirio Diaz the country has advanced rapidly in all that it pertains to political, commercial and industrial life, and the President is acknowledged by the civilized world as one of the rulers whose aim has been to make his country



FARM WAGON, HACIENDA, NEAR SAN LUIS POTOSI.
By courtesy of Mexican National R. R.

one of the most liberal and progressive nations, and few have made more advancement. The Republic is rich in its agricultural and mineral products. Coffee is one of Mexico's important crops. Rice is another important crop, while Indian corn, which is the great staple crop, furnishes the greater part of the food for the poorer people, and in addition there is little grown in the temperate zone that cannot be grown abundantly in Mexico. The cattle industry is a great source of wealth. Another considerable industry is that of hides and skins, the goat skins ranking among the best in the world. The forest wealth is also great. In mineral products Mexico has always been famed and mining has been followed since the country's earliest history. Silver is the most important metal, while onyx and other valuable stones abound. In fact, there is scarcely a mineral known that cannot be found in Mexico. Owing to the confidence imparted by the just and progressive administra-

tion, manufactures have grown rapidly in recent years, and the working people have become more industrious and progressive than heretofore. The foreign commerce is extended and important. Of the imports in 1896 and 1897 the United States furnished \$22,593,000 of the total of \$42,204,095. Of the exports the United States took \$45,366,563 out of a total of \$58,122,860. The imports of vehicles from the United States amounted in 1896 in value to \$687,425.



NATIVE DEPARTMENT STORE AT SALTILLO.
By courtesy of Mexican National R. R.

The building of the three great railroads has done much to develop the country and increase the commerce between Mexico and the United States.

We are indebted to Mr. W. F. Paton, general eastern agent for the Mexican National Railroad (Laredo route), for illustrations herewith and other courtesies.

Since the impetus given to manufacturing there has been a falling off in the value of manufactured goods of some kinds, but the demand for machinery and materials has increased and will undoubtedly continue to do so. No country offers greater prospects for the future.

MEXICO AT THE FAIR.

AMONG the interesting features of the Mexican exhibit at the Pan-American Exposition will be the Mexican Government Mounted Band and Mounted "Rurales," the personnel of which will be as follows:

A chief with an adjutant officer.

Fifty musicians with a commanding officer.

Twenty mounted "Rurales" with a mounted commanding officer.

A corporal and four infantry soldiers, corporal and four mounted soldiers, a corporal and four artillery soldiers and a corporal and four engineers. This group will be commanded by a second-class captain.

The total force will be as follows: A chief, four officers, ninety soldiers and twenty-six horses. They will be quartered in the "Streets of Mexico." There will be separate departments for the chief, for the cavalry and for the rest of the force.

MEXICAN TARIFF.

In addition to the duties hereinafter mentioned, foreign goods are liable, on importation, to 2 per cent. for port works, 7 per cent. for stamps and 1½ per cent. for municipal taxes, making 10½ per cent. extra altogether.



CITY HALL, MONTEREY, MEXICO.
By courtesy of Mexican National R. R.

We have selected from the Mexican tariff the following list of articles that are of direct interest to carriage builders and the accessory trades, arranged under the headings as they are in the official list, the rates being in American money.

III.

White or yellow wax, net kilo.....	\$0.50
Strong glue, gross kilo.....	.05
Fish glue, legal kilo.....	.10

IV.

SADDLERY.

English and all other kinds of saddles, even when they have ornaments or trimmings not made of gold or silver, legal kilo.....	2.00
All leather goods not specified herein, legal kilo.....	1.50
Leather belting for machinery, when they do not come affixed to corresponding machinery, gross kilo.....	.50
Belting made of rawhide for machinery, when they do not come affixed to the corresponding apparatus, gross kilo.....	.10
Belting made of leather or rawhide for machinery, when they come affixed to the engines or apparatus pertaining to the same, gross kilo.....	.01
Calf skins, patent leather, kids, chamois and other common kinds of tanned leather, legal kilo.....	1.30
Harness of all kinds for wagon or carriage teams, legal kilo....	1.50
Buckles and rings lined with leather, legal kilo.....	.30

VEGETABLE PRODUCTS.

Turpentine, or spirits of turpentine, legal kilo.....	.10
Wood in form for putting together for carriage bodies.....	.02

MINERAL PRODUCTS.

Goods made of copper, brass, bronze and white metal, not specified, legal kilo.....	.40
Goods not specified, of copper, bronze or any other common metal, gilt or plated, whose weights exceed 10 kilos, legal kilo.....	.40
Iron or steel axles and axle boxes for carriages, gross kilo.....	.10
Steel springs for carriages, gross kilo.....	.10
Manufactures of iron or steel, enamelled wholly or in part, whatever may be the weight, legal kilo.....	.25
Exceeding 10 kilos in weight, each, legal kilo.....	.10



OX CART, SOUTH WESTERN MEXICO.

STONES AND EARTH'S MANUFACTURED GOODS.

Grindstones and whetstones, gross kilo.....	.05
Mirrors with frames of brass, zinc, tin, white metal, wood or pasteboard, up to thirty centimeters per side, legal kilo.....	.25
Up to seventy-five centimeters per side, legal kilo.....	.30
Mirrors with frames of celluloid, gutta percha or cloth, not containing silk, up to thirty centimeters per side, legal kilo.....	.30
Up to seventy-five centimeters per side, legal kilo.....	.35

WOOL FABRICS.

Woolen tassels, with bobbins of the same or other material, legal kilo.....	1.00
Woolen tassels, with cords of the same material, legal kilo....	1.00
Fringe, galloon, braid, ribbon and net work or other similar ornaments of wool, legal kilo.....	2.50
Saddle cloths of wool or felt, with or without leather or common metal, net kilo.....	2.00

SILK, AND SILK MIXED WITH OTHER MATERIALS.

Silk tassels, with cords of the same material, net kilo.....	6.00
Silk tassels mixed with cotton, linen or wool, with bobbins of the same or other material and with or without cords of the same materials, net kilo.....	2.80

CHEMICAL PRODUCTS.

White and colored varnish, legal kilo.....	.20
Blacking, varnish or japan in paste or liquid, for boots or harness, legal kilo.....	.20
Colors in powder, crystals or prepared, gross kilo.....	.08
Putty, tin, gross kilo.....	.03

MACHINES AND APPARATUS.

Electric batteries.....	Free
Hand bellows, legal kilo.....	.40
Tools of all kinds and materials for workmen, legal kilo.....	.05
Machinery and apparatus and their loose and extra parts, for whatever object, not specified, when not arranged to be moved by crank, pedal or lever, gross kilo.....	.01
When arranged to be moved by crank, pedal or lever, legal kilo.....	.05

VEHICLES.

Wagons, trucks and carts, without springs, for carrying freight, gross kilo.....	\$0.06
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Wagons, trucks and carts, with springs, for carrying freight, gross kilo.08
Hand carts and wheel-barrows with one or two wheels, gross kilo.01
Carriages of all kinds, not specified, weighing not more than 100 kilograms, net kilo. ....	.00
Carriages of all kinds, not specified, weighing more than 100, not to exceed 250 kilograms, net kilo. ....	.55
Carriages of all kinds, not specified, weighing more than 250, not to exceed 500 kilograms, net kilo. ....	.50
Carriages of all kinds, not specified, when weighing more than 500, not to exceed 750 kilograms, net kilo. ....	.45
Carriages of all kinds, not specified, weighing more than 750, not to exceed 1,000 kilograms, net kilo. ....	.40
Carriages of all kinds, not specified, weighing more than 1,000 kilograms, net kilo. ....	.35
Carriages in rough, without trimmings or paint, weighing not more than 100 kilograms, net kilo. ....	.30
Carriages in rough, without trimmings or paint, weighing more than 100, not to exceed 250 kilograms, net kilo. ....	.25
Carriages in rough, without trimmings or paint, weighing more than 250, not to exceed 500 kilograms, net kilo. ....	.20
Carriages in rough, without trimmings or paint, weighing more than 500, not to exceed 750 kilograms, net kilo. ....	.15
Carriages in rough, without trimmings or paint, weighing more than 750, not to exceed 1,000 kilograms, net kilo. ....	.12
Carriages in rough, without trimmings or paint, weighing more than 1,000 kilograms, net kilo. ....	.10
Small carriages, all kinds, for children, net kilo. ....	.30
Stage-coaches, omnibuses, and covered coaches of all kinds, without springs, net kilo. ....	.10
Stage-coaches, omnibuses, and covered coaches of all kinds, with springs, net kilo. ....	.20
Fore-sets for carriages, gross kilo. ....	.60
Wheels, separate, for carts, gross kilo. ....	.15
Wheels, separate, for carriages, gross kilo. ....	.60



CHARCOAL PEDLER, MEXICO.

MISCELLANEOUS.

Whips of all kinds, without ornaments of fine metal, legal kilo. .	1.25
Paint brushes of all kinds, legal kilo. ....	.30
Rubber in sheets with or without cloth, legal kilo. ....	.10

NOTES.

Carts and wagons are understood to be those vehicles which are only adapted to the transportation of merchandise and consequently cannot be used for passengers, and still less for pleasure driving.

Under the name of carriages this fraction includes all those vehicles which are adapted to the transport of persons, whether in parks, cities or country. Even when the vehicles have flat bottoms, as in the spring wagons, road wagons, etc., or when they carry small packages or trunks, they will come under the head of carriages, always provided they are not in the conditions specified (elsewhere).

By carriages in rough are meant vehicles the wood of which is neither painted nor varnished, and whose cushions have no coverings of cloth, leather or oil cloth, etc.

Under the denomination of stages, omnibuses and wagons, this fraction includes all strong vehicles adapted to the transportation of passengers. The wagons must have seats for more than eight passengers, it being a matter of indifference whether they have hood or not.

Under the name of wagons this fraction also includes those vehicles which are exclusively intended for the delivery of goods within towns and which, from their class or form, cannot be used for driving in parks.

NICARAGUA.

THE Republic of Nicaragua, situated between Costa Rica and Honduras, with a frontage of 300 miles on the Caribbean Sea, and about 200 miles on the Pacific Ocean, has an area of about 49,200 square miles, and a population (in 1893) of 360,000. Under the Constitution of 1858, the legislative power is vested in a Senate of eighteen members and a House of Representatives of twenty-one members, elected by universal suffrage. The President is elected for a term of four years.

Nicaragua has opportunities for agricultural wealth, owing to the richness of soil and the varied climate, but owing to a lack of transportation facilities it has been but partially developed. The forest products are exceptionally rich in the finer wires, as well as in cabinet and building woods. The country is also rich in its mineral wealth, especially gold. There are also deposits of silver, copper, iron, zinc and valuable stones. Manufacturing is at a low ebb, the greater part of articles for domestic use are imported, nearly every article worn being the product of other countries. Vehicles do not constitute a material feature, the value in woods and manufactures, which includes wagons, in 1896, was but \$24,048. During the past twelve years the government has built some fine wagon roads, one of the most important being 100 miles long.

The attention of the world is attracted toward Nicaragua, owing to the contemplated construction of the Nicaragua canal, which will furnish a waterway connecting the two oceans, and there is no doubt that the commercial industries of the country will improve.

PARAGUAY.

THE Republic of Paraguay is an inland country, but is bordered by large rivers, by which communication is had with the Atlantic Ocean through Argentina and Uruguay. Its eastern portion, which is the settled part, has an area of 148,000 square miles, and a population (in 1894) of 430,000. By the Constitution of 1870, the legislative power is vested in a Senate and a House of Deputies, the members of both being elected direct by the people, one Senator for every 12,000 people, and one Representative for every 6,000. The President is elected for four years. Very little is known of the country, although its climate is salubrious and its soil rich. Consul Flagg says of it that "It is doubtful if any spot on the earth's surface as small as Paraguay will yield such a variety of agricultural products with as little labor." The forests abound in splendid wood and the lumber industry is an important one. Manufacturing is confined mainly to articles needed for home supplies. The greater part of the imports, whether direct or indirect, are of British or of German origin. Trade with the United States is small and is confined to a few articles. The roads are badly kept, and freighting is done by ox teams, while passengers are carried by ponies. Harness and saddles and carriages are imported to a considerable extent, the duty being 40 per cent. ad valorem, but the statistics do not show that any considerable amounts are imported.

United States Vice-Consul Harrison, of Asuncion, gives the imports in 1899 as \$2,482,800, and the exports at \$2,299,400. The United States exported to Paraguay in 1899, according to our Treasury returns, goods to the value of \$11,159, and imported therefrom \$160 worth. Hides and essence, says Mr. Harrison, are sent to the United States. A large proportion of the imports into Paraguay comes from the United Kingdom, though Germany also controls the trade in a number of lines. The following as to public works in Paraguay is furnished by Consul Ruffin, of Asuncion:

Much interest is being shown in public improvements in Paraguay. The President has sent to Congress a project of law to create a fund to construct roads, build bridges, deepen river channels, improve the port, etc. For these improvements he asks that \$500,000 be annually taken from the income of the nation.

The finance minister asks that 30 per cent. be devoted to the construction of roads and bridges and 70 per cent. to dredging rivers and constructing port walls.

The pass at Angostura in summer is almost impassable for boats coming to Asuncion, involving expense in transferring cargo.

The mayor of Asuncion has expressed a desire to have an American engineer open new streets and broaden old ones in the city.

Arrangements are being made to build a narrow-gauge railroad from San Pedro to the river. There is an opportunity for good returns on capital invested in the construction of short railways. Parties interested should communicate with Senor Carlos R. Santos, who speaks and writes English and was the government delegate to the Philadelphia Commercial Congress.

A representative of German bridge and road building firms is now conferring with the administration relative to the projects above referred to.

There is a plan to open up ports at the towns of San Pedro, Rosario, Villetta, and Paso de Patria. San Pedro and Rosario are important points for shipment of tobacco, skins, hides, and yerba mate. Villetta has considerable commerce in the exportation of oranges, and would make much progress with a port; Paso de Patria, situated at the south end of the Republic, is the doorway of the River Alta Parana and the extensive zone of the Misiones—the rich cattle section.

Studies are being made to ascertain the cost of constructing a system of waterworks for Asuncion.

TAXING SALESMEN.

ACCORDING to the terms of the law of November 28, 1900, says the *Bulletin Commercial*, of Brussels, salesmen traveling in the Paraguayan Republic, with or without samples, are subjected to the payment of a fixed tax, personal and nontransferable, of \$500 for six months, which must be paid to the municipality of Asunción.

The Customs Administration requires commercial travelers or commission merchants importing samples which could be sold as merchandise to furnish security for the amount of the duties on these articles in case of sale. This security is returned if the samples are not sold and are re-exported.

PERU.

THE Republic of Peru extends along the Pacific coast from Ecuador to Chili, having a shore line of about 2,000 miles, and an average width of 500 miles. It has an area of about 464,000 square miles, and a population of 2,621,844. The Constitution, as revised in 1860, provides for a Senate and a House of Representatives, the former



LIMA, PERU, PARTIAL VIEW OF THE CATHEDRAL, PORTAL DE BOTONEROS.

composed of Deputies of the provinces, and the latter of Representatives nominated by the electoral colleges of the provinces of each department. The President is elected for four years. Two Vice-presidents are also elected. The climate is varied and the variety of vegetable products great, comprising the products of the temperate zone as well as those of the torrid. Sugar is one of the most important products. Cotton is also produced, being second to sugar. Coffee is cultivated to a considerable extent. The forests contain many valuable trees, India rubber being one of the largest of the forest products.

The mineral wealth of Peru has always been a great source of wealth. Silver, gold and copper abound; precious stones are also abundant. The gold mines of Carabaga are said to have been the source of the Inca riches. So rich is that district that one writer says that "not a stream exists that does not carry gold." But notwithstanding the richness of the gold deposits, silver mining is the chief mineral industry. The other minerals are so numerous that there are few if any of the minerals found elsewhere that cannot be found in Peru.

Manufacturing industries have never played an important part in the industrial affairs of the republic, but during recent years there has been a change, and now many articles are produced. Among these are saddles and bridles. The saddles adapted to long rides have special features, and very few are imported. One of the great obstacles to trade with the United States is the lack of transportation facilities. "One can ship goods from Liverpool to Callao or

other Peruvian ports for a little more than one-half the rates from New York by the way of the Isthmus." Then, too, our people have not studied the tastes and wants of the people of Peru. If our people expect to build up trade with Peru they must make a study of the people, their wants and tastes. There are no highways in Peru, nor is any freight carried on wheels to the interior; everything is



PLAZA É IGLESIA DE LA MATRIZ, CALLAO, PERU.

carried on the backs of mules and donkeys, and passengers on the saddle. Carriages are largely used in the cities, and a moderate portion of those used are from the United States. This trade could be increased if transportation is reduced. The country offers a tempting field for American manufacture of special kinds, which should be cultivated.

PRESIDENT'S MESSAGE.

The following extracts are from the President's message at the opening of the last Peruvian Congress (translated by Minister Dudley, of Lima):

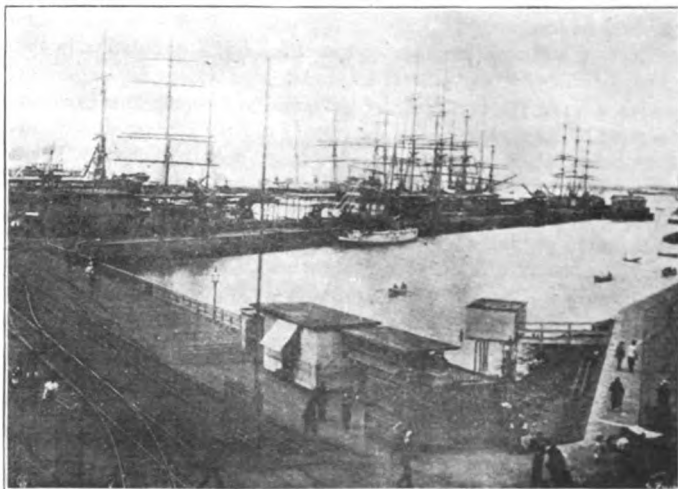
The total commerce of Peru for 1898 was valued at 82,052,621 soles (\$34,544,153); for 1899 the figures were 79,762,414 soles (\$34,935,937). The importations and exportations of merchandise were as follows:

Year.	Soles.	Exports.	Soles.	Imports.
1898	30,274,776	\$12,745,680	19,297,272	\$8,124,152
1899	30,725,911	13,457,949	18,734,949	8,205,908

These figures do not include the commerce of Iquitos, which amounted in the year 1899 to 5,384,635 soles (\$2,358,470).

The exportation of mineral ores was valued at \$10,667,012 soles (\$4,672,151).

It is impossible to estimate the wealth of the mines. A comparison of the exportation of metals at the port of Callao during the first six months of the current year with the same period of 1899 shows an increase of 3,459,796 soles for 1900.



PORT OF CALLAO, PERU.

The gold standard is now permanently established in Peru. The importation of gold has increased almost 80 per cent. since the year 1896. Including the sums held by the banks, the total brought into the country during the last three years amounts to 6,000,000 soles.

The nation has entered upon a new period of industrial activity. Numerous companies have been formed to explore the Amazonian region; new roads are being opened in every direction—one to the mines of Santo Domingo, one uniting the port of Paita with Pongo de Manseriche, and also one from Sieuani to the Inambari. There is marked confidence in the stability of order, and under the benign protection of peace old financial institutions and industrial and mining enterprises are thriving and public wealth is rapidly increasing.

The economic situation of the country, on account of the revolutionary movement, is not altogether satisfactory. The sugar industry, however, shows an increase in the exports of 882,539 soles* (\$386,552) in favor of 1899.

The increase of commerce with the United States of America† is worthy of attention. The gain in sugar alone was 24,192,524 kilograms (55,334,838 pounds) for the year 1899.

The following table shows the general commerce of Peru with the United States for the last four years:

Year.	Soles.†	Value.
1896	3,089,134	\$1,519,854
1897	3,040,150	1,365,027
1898	4,951,902	2,084,751
1899	7,329,642	3,210,383

Imports in 1898 were valued at \$8,121,300, of which the United States sent \$876,900; England, \$3,640,800; Germany, \$1,434,700; France, \$655,400, etc. Exports amounted to \$13,961,100, of which over half (\$7,234,000) went to England, \$1,212,400 to our country, \$1,140,300 to Germany, \$346,200 to France, etc. The *Deutsches Handels-Archiv* says, in regard to industrial conditions:

The development of manufacturing is noticeable—causing a sensible injury to the import trade in certain articles, as unbleached cotton, bedding, towelings, and hosiery. A manufactory of felt hats has been established in Lima also one for making shoes. Brick kilns and potteries have appeared; a second manufactory of Swedish matches has been established; one for making acetylene gas; companies for the preparation of sterilized milk, for street paving, and other undertakings of less importance.

The following notes on communications are taken from the Belgian *Recueil Consulaire*:

Eleven railways are in operation in Peru, and five more are projected. Seven of these roads belong to the Peruvian corporation and have a total extent of 797 miles. The rates of transportation are so high on all these roads that it is said that the transport of a ton of coal from Oroya to Lima would exceed the price of a ton of coal imported from England. Among the important ways of communication now being opened is the central route, called the "Route du Pichis." Ninety miles has already been completed. When the whole road is opened the trip between the two oceans will be made in the following manner: From Callao to Oroya by railway (137 miles); from Oroya to Puerto Bermudez by horses (186 miles); from Puerto Bermudez to Iquitos by steamers (about 932 miles), and from Iquitos to the mouth of the Amazon (2,175 miles). It is estimated that the journey from Lima to Iquitos can then be made in ten days, or even less, instead of two or three months, as at present.

The telegraphic lines of Peru have a total length of 1,864 miles. The service is not self-supporting; the posts, being made of wood, decay, and the wires of galvanized iron oxidize rapidly and break, in this way interrupting the service

SALVADOR.

THE Republic of Salvador is the smallest of the Central American Republics, having area of 7,255 square miles. It lies on the Pacific coast, having an ocean frontage of 139 miles, and a population in 1898 of 800,000. Legislative power is vested in a Congress of seventy Deputies, elected for one year, by universal suffrage. The President has a term of four years. The country is rich in lumber, dye woods, and medicinal plants. There are also large deposits of gold, silver, copper, lead and coal, the mining of which, however, is but slightly developed. Agriculture is the chief industry, coffee being one of the most valuable products. Sugar cane is grown to a considerable extent. With proper machinery for sugar making sugar would become a great industry. The Republic has about 2,000 miles of wagon roads, but they are in a bad condition, being simply cuts in the hillsides of sufficient width to allow two carts to pass each other, and broken axles, wheels, etc., are common. Where there are no roads, transportation is done by pack mules. On this account, all packages should be made as small as practicable. The carts have wood axles and are without springs. The body is about 9 feet long and 3 feet 6 inches wide. They are heavy and strong. No mention is made of the importation of carts or wagons from the United States.

* The Peruvian sol was valued in 1899 at 43.8 cents.

† Peru is one of the few South American countries with which our trade is increasing. The following table (taken from United States Treasury returns) shows imports from Peru and exports thereto in the last few years:

‡ In 1896 the value of the Peruvian sol was 49.2 cents; in 1897, 44.9 cents; in 1898, 42.1 cents; in 1899, 43.8 cents.

URUGUAY.

THE Republic of Uruguay is in the south temperate zone, having a frontage on the Atlantic Ocean and the Laplata River on the east and south, and the Uruguay River on the west. It has an area of about 72,000 square miles and a population of 818,843 (in 1896). The legislative body consists of a Senate and a House of Representatives, the members of the Senate being elected for a term of six years, and those of the House for three years. The President is elected for a term of four years. The principal industry is the raising of cattle and sheep. The country buys largely from the United States, but carriages or wagons figure among the smaller items as to values, as do carriage materials, Great Britain and France having the bulk of the trade.

REGULATIONS APPLICABLE TO COMMERCIAL TRAVELERS, URUGUAY.

The *Commercial Bulletin* of Brussels calls attention to the fact that commercial travelers to Uruguay are obliged to send in a written request upon stamped paper of third class (50 centavos, gold) to the customs authorities for the required license before they can begin operations.

The cost of the license, which is good from the 1st of January to the 31st of December, is \$100 gold. However, the cost is reduced one-half when it is taken out during the third quarter of the year and three-fourths when taken out during the last three months.

Commercial travelers are advised to provide themselves with a passport issued by the authorities of their country.

The samples accompanying the commercial travelers are admitted upon the simple production of the license, with surrender of the permission of introduction and payment of the duties, if there are any, in conformity with the stipulations of the existing customs tariff and the annexed laws.

The importation of arms and war ammunition is subject to the authorization of the War and Navy Department.

IMPORTS AND EXPORTS.

Minister Finch, of Montevideo, says that the total imports in 1899 were \$25,551,788, against \$24,784,360 in 1898; and the exports \$62,125,952, against \$55,061,276 in the preceding year. The chief increases in the imports were in raw materials, machinery, and "soft goods"; in the exports, gains were noted in slaughterhouse products.

The trade in 1898 was divided as follows among the principal countries:

Countries.	Imports.	Exports.
England	\$6,762,000	\$2,884,000
France	2,637,000	5,516,000
Germany	2,311,000	2,810,000
Italy	2,279,000	577,000
Spain	1,944,000	236,000
United States	1,932,000	984,000
Belgium	1,372,000	5,399,000

VENEZUELA.

THE Republic of Venezuela, in the northern part of South America, claims an area of 599,533 square miles, and an estimated population of 2,444,816. Legislative power is vested in a Senate, composed of three Senators from each of the eight states, elected by the State Legislature, and a House chosen directly by the people. The President is elected by a federal council of nineteen members, biennially, from one of its members, for the term of two years. In soil, climate and all other conditions that go to make a country adapted to man, Venezuela is favored. The cereals of the temperate zone grow as luxuriantly as do the natural products of the tropical. Agriculture and cattle raising are the principal sources of wealth. Coffee, sugar and tobacco are leading staples. The mineral resources are great and are being developed rapidly. Carriages, wagons and carts are listed among the exports from this country, but there was a marked falling off between the years 1892 and 1896. Since the latter year no official data is obtainable. German influences predominate, many of the largest firms being of that nationality.

IMPORTS AND EXPORTS.

Imports in 1897 were valued in the *Review* of last year at \$13,241,000, and exports (in 1896) at \$21,510,000. In the absence of more recent figures as to the general trade, the following table, showing the commerce of the United States and the principal European coun-

tries competing for the trade of Venezuela, has been compiled from the official returns for 1899 of the countries named:

Countries.	Imports from Venezuela.	Exports to Venezuela.
United States.....	\$5,669,900	\$2,641,400
Great Britain	222,000	2,407,200
Germany	2,237,200	952,000
France	7,604,200	636,900
Spain	618,500	341,500

The staple exports are coffee, cocoa, hides, and rubber. Other items cover quinia bark, sugar, copaiba, tonga beans, feathers, fustic, dividivi, gold, and fish sounds. Imports include provisions, dry goods, hardware, coal, oil, cement, timber, and machinery. England sends textiles, cotton and woolen, jute goods, wrought and unwrought iron, and machinery. The following details as to the dry goods market and general trade conditions in Venezuela are taken from a report by Consul Goldschmidt,, of La Guayra:

There is not a United States dry goods establishment, either wholesale or retail, in Venezuela. This branch of business is generally controlled by Germans, French or Venezuelans, and the Europeans naturally import most of the dry goods from their native countries. It has been customary in the past for European houses to give extended credits here; but of late this has been somewhat restricted, owing to the political and financial disturbances during the past two years. The European manufacturer pays close attention to the demands of this trade and will execute an order of almost any size. It would be to our advantage, I think, to combine different manufacturing interests for the purpose of carrying on foreign trade. The rule with the buyer here is to deal with as few individuals as possible, although he wishes to purchase from the manufacturer direct. Traveling agents should wait on the trade several times a year. Catalogues are very well in their way, but no amount of printed matter will accomplish the same results as the man with the sample. I think, too, that the man who is paid a decent salary accomplishes better results than the one who works on commission.

Another important factor is the packing and shipping of goods. In Venezuela, as well as in many other Southern American countries, duties are levied according to the weight of merchandise, and more may be paid at times on a heavy case than on the contents. Hosiery, ribbons, etc., come from Europe with very light packing; for instance, a dozen fine-grade hose come in a thin but strong wrapping paper, and hundreds of these bundles are packed in a bale covered with burlaps or a very light wooden box. Ribbons are shipped in pieces of about ten yards or meters, a number of such pieces being folded or rolled and packed closely in a paper box and shipped in bales or light cases. Every effort is made to save weight.

Another point to be remembered is in connection with consular invoices. All goods entered at the custom-houses here must be invoiced, and this brings up the question of classification. It will not pay to pack together goods which belong to different classes of the tariff, and duties are assessed on the whole according to the goods on which the highest rate is demanded.

The absence of a parcels-post system is a great drawback to United States trade in Venezuela. French and German trade by parcels post has developed greatly of late, and it is surprising to see the amount of merchandise introduced in this manner. A customer can thus receive an article for his personal use and give it a trial; if satisfactory, the result may be a heavy order for the goods. Many "Yankee notions," now unknown in this market, could be introduced in this way.

This is the proper time to introduce United States goods into Venezuela. Europeans give less extended credits at present, and thus are losing one of their advantages over Americans. We should certainly be able to compete under present conditions. In normal times, this market is excellent. We now sell only a small amount of dry goods to Venezuela, mainly heavy drills, ducks, bleached and unbleached cottons, and the cheaper grades of prints.

COMMERCIAL MUSEUM IN CARACAS.

Consul General Guenther of Frankfort, under date of January 31, 1901, reports:

The Chamber of Commerce of Düsseldorf states that in the near future a commercial museum will be instituted at Caracas to exhibit European industrial and art products; it will receive governmental aid. Branch museums will be opened in Valencia, Maracaibo, Ciudad Bolivar, Barquisimete, and other suitable places. Goods for the museum will be admitted free of duty; this will be exacted only after the goods are sold. No expenses will be charged to the exhibitors. These are advised to send at least five copies of samples and price lists, so that the branches can also be supplied.

THE GUINEAS.

BRITISH, French and Dutch Guinea, as well as British Honduras, are colonies of the respective countries named, and the trade with each is very slight in carriages, wagons, etc., and owing to long credits given by Europeans, American merchants are placed at a decided disadvantage.

IMPORTS AND EXPORTS.

British.—Consul Moulton, of Demerara, says that imports for the fiscal year ended March 31, 1900, amounted to \$6,329,764. Over 56 per cent. of the imports come from England; 12 per cent. from British colonies, 28½ per cent. from the United States, and the remainder from other countries. There is a decrease in trade during the year, imports of provisions from the United States declining. Shoes, bicycles, and textiles also suffered. On the other hand, imports of flour, lumber, machinery for the manufacture of sugar, and other items increased. Exports amounted to \$9,254,200, of which \$4,022,350 went to the United States, \$4,629,075 to England, \$216,400 to British colonies, etc. There is now a fortnightly steamship service between Canada and Demerara. The railway from Georgetown to New Amsterdam is completed. Electric lights have been installed in New Amsterdam, and the tramways modernized. The plant and machinery came from the United States.

The "Nachrichten für Handel und Industrie," Berlin, gives the following statistics regarding the gold production in British Guiana for the years 1895-1899:

Year.	Quantity. Ounces.	Value.
1895	122,023	£451,200 \$2,195,765
1896	124,713	461,300 2,196,251
1897	122,702	449,200 2,186,032
1898	113,070	412,200 2,005,971
1899	112,944	414,800 2,018,624

Twenty thousand one hundred persons were employed in the gold fields in the year 1899—14,805 in Georgetown, 2,624 in Bartica, and 2,624 in Arakaka.

Dutch.—Imports in 1899 were valued at \$2,448,800, of which \$532,000 came from the United States, \$1,281,100 from Holland, \$214,600 from England, etc. The total exports were \$2,206,800, of which the United States took \$1,284,300, Holland \$708,400, England \$166,500, etc. Goods were also imported from Demerara and Barbadoes, and most of these were of United States origin. Cocoa, gold, sugar, coffee, and wood are sent to the United States. Balata gum goes to Holland. Our consular agent at Paramaribo, Mr. Deyo, thinks we have a chance to increase our trade in cotton textiles. American coal has recently been used.

The following is summarized from the Recueil Consulaire, Brussels, volume 104, 1899:

Surinam, with its majestic rivers and its fertile soil, is one of the richest of Dutch possessions. The chief productions are sugar, cacao, coffee, balata gum, and rice, the latter cultivated in the lower coast regions. Although Surinam has many different kinds of timber and hard woods suitable for cabinetwork, the cedar and bulley tree are the only kinds of importance for exportation, the lack of means of communication being partly responsible for this, as well as the inveterate habit of the natives of working only when they please or when forced by necessity. The most important question since the abolition of slavery in 1863 is that of manual labor. Coolies from the British Indies are the principal immigrants. They become easily acclimated, and are vigorous and industrious. A planter can ask for as many coolies as he desires, paying \$63 per head, besides a tax of \$2 for every adult man and 50 cents for a woman over fifteen years of age. The government claims for medical attention \$3.25 for each adult and \$1.60 for a child under fifteen. Most of the Chinese who remain in Surinam at the expiration of their contract go into the towns or install themselves as merchants on the plantations. Opinions are divided upon the subject of European colonists. An attempt was made in 1845 by forty planters, which failed for lack of resources, only a few succeeding. In general, it may be stated that a limited number only of young and vigorous peasants should be sent at a time, and at the charge of the State, instead of a company. In 1897, a society was founded in Holland to investigate the mineral and geological resources of the colony. A tract of 12,350 acres, situated between Paramaribo and Lawa, has been put at its disposal, and the society has obtained the grant for the installation of railways and tramways from Paramaribo to this district. Several large English societies have been formed for the exploration of the rich gold beds of the colony. Trials have been made of the cultivation of tobacco, with favorable results.

French.—Imports are mostly from the mother country (\$2,007,200 worth was exported to the colony from France in 1899), and consist of provisions, drinks, and miscellaneous manufactures. Cotton and woolen textiles come from England, and America sends flour, provisions, oleomargarine, hay, grain, petroleum, and lumber. The gold product of the colony for 1899 was 5,603 pounds, which went to France. The value of French imports from the colony was \$57,900. Consular Agent Lalanne says that the roads near Cayenne are well adapted to the use of the bicycle, but the number employed is small, because of their high price; they cost, including freight and charges, from \$80 to \$100 each. He thinks the number would be doubled if a good machine could be retailed on the market at from \$50 to \$60.

Automobile Department.

ONE HUNDRED MILE ENDURANCE TEST, SATURDAY, APRIL 20, 1901.

HAD the elements entered into a conspiracy with the most inveterate enemy of automobiles, worse conditions could not have been brought about than those which confronted the Long Island Automobile Club on Saturday, April 20, the day chosen for the club's endurance test for a hundred mile run. The drivers faced a heavy rain from the start to the finish, and the Long Island roads, although otherwise good, became a veritable sea of mud. The general conditions fixed a speed limit of fifteen miles an hour as the maximum,



GETTING READY.

an excess of which at any time to disqualify the machine. The time limit provided for covering the course in twelve and one-half hours; the speed through villages and towns to be reduced to eight miles per hour, violation to disqualify the machine. In addition there was a hill climbing contest. Each entry to be able to carry two passengers, side by side on the one seat, and each to carry a full complement of passengers. Blue ribbons to be awarded only where the rules were complied with. The main object being to determine the endurance qualities of the respective machines and limit speed to a degree that would make the one hundred mile run in twelve and one-half hours. Of fifteen competitors nine completed the century in less than eight hours, five in less than seven hours and two in less than six hours, at least a third of the first nine finishers having made the run without a single stop. Because of a limitation of speed to fifteen miles an hour the first two vehicles to complete the journey were disqualified, while the drivers of one other carriage were notified before they had half covered the course that their time would not be considered because of excessive running.

Of the fifteen competing vehicles all were propelled by gasoline motive power, the entries of steam and electric vehicles, as well as of six other gasoline carriages, having been scratched on account of the weather. The first two to cover the course were gasmobile road wagons entered by the Automobile Company of America, their times being respectively 5h. 35m. and 5h. 53m.

Each was of nine horse power, and carried two persons, the operator of the first being Charles Meyer and of the second J. M. Upperqu. Third to finish in the run was C. J. Field, in a De Dion-Bouton motorette, his elapsed time being 6h. 58m. This time, how-



WON THE RED RIBBON.

ever, was beaten by two minutes by John D. Pratt's (gasmobile) white road wagon, driven by F. W. Walsh. As Mr. Field, however, had been compelled to make one stop en route he was rendered ineligible as a blue ribbon winner. Mr. Pratt and Mr. H. S. Chapin

(Haynes-Apperson), with three guests, in a four seated surry, did not make a stop in making the century.

The start and finish were at Jamaica, the course running north to Flushing, east to Oyster Bay, south across the island to Massapequa, west to Freeport, north to Mineola and Lake Success, south and west to Queens, thence around a loop taking in Hempstead, Lynbrook, Springfield and back to Queens, and west along Hillside avenue to the finish. The route was officially measured and is an even century.

Under ordinary conditions the course is an ideal one, consisting principally of macadam turnpikes, with easy grades along the north shore and long level stretches near the south shore of the island. The steepest hill is at Roslyn, upon which the competitors were timed during the century run in a hill climbing contest.

Each vehicle, besides the operator, bore an official timer, while other timers were placed at turning points along the course. Vehicles were started at half minute intervals, the first one being despatched on its journey at twelve minutes past nine o'clock in the morning and the first arrival at the finish being timed at twenty-five minutes of four o'clock in the afternoon.

The hill climbing contest furnished fun for those who reached Roslyn. C. J. Field was first to reach that incline and defeated Charles Meyers, his nearest competitor. K. A. Skinner's rig finished the ascent in the shortest period. He covered the half mile in 1 minute 48 seconds.

The summary of the start and finish:

C. J. Field.....	9:12:00	4:10:00
Tommy Green.....	9:13:00	Did not finish.
J. Lonvquez.....	9:13:30	Did not finish.
H. B. Barruch.....	9:14:30	4:20
K. A. Skinner.....	9:15:00	Did not finish.
A. L. McMurtry.....	9:15:30	5:14
F. W. Walsh.....	9:16:00	4:12
L. Markle.....	9:17:00	Did not finish.
C. Harms.....	9:17:30	Did not finish.
C. J. Wridgeway.....	9:18:30	Did not finish.
F. A. Law.....	9:20:00	4:50
Charles Meyers.....	9:22:00	2:57 (disqualified)
I. M. Upperqu.....	9:23:00	3:16 (disqualified)
E. Apperson.....	9:24:00	4:36
C. R. Greuter.....	9:26:00	4:08



TWO OF A KIND.

The reports of time keepers showed that of the fifteen competing carriages the only ones that had fulfilled requirements as to speed and had not made a stop during the entire run were those of John D. Pratt (gasmobile) and H. S. Chapin (Haynes-Apperson). The former made the century in six hours and fifty-six minutes, and the latter in seven hours and twelve minutes.

Mr. Pratt's vehicle was a white enamelled road wagon of nine horse power, and the operator was F. W. Walsh. The vehicle carried an open faced watch and cyclometer where they could be seen at all times by the driver, and a fifteen mile an hour pace was maintained throughout, except in passing through towns.

Mr. Chapin's carriage was a four seated surry of eight horse power, and was operated by Edgar Apperson. Mr. Chapin had as companions F. V. Walter and John Ralph. This vehicle narrowly escaped from making a halt when one of the passengers lost his hat, but slowed down without stopping the motor.

Red ribbons to vehicles making total stops of less than ten minutes were awarded to C. R. Greuter (Holyoke), with a two minute stop and elapsed time of 6h. 42m.; C. J. Field (De Dion-Bouton), with six minutes in stops and elapsed time of 6h. 58m., and to Dr. Herman B. Barruch (Darroq), with six minutes in stops and elapsed time of 7h. 6m.

E. A. Law (Electric Vehicle Company) and C. Harms (Daimler) were awarded yellow ribbons, with stops of more than ten minutes, while a white ribbon is the reward of A. L. McMurtry (Ohio Automobile), whose total stops exceeded half an hour. The disqualified

vehicles were those operated by Charles Meyer (Gasmobile) and I. M. Uppercu (Gasmobile), they having exceeded the speed limit of fifteen miles an hour. Five of the competing vehicles retired from the test.

In the hill climbing contest the special cups were awarded as follows: For vehicles of more than two thousand pounds, to C. R. Greuter (Holyoke); for vehicles of between one and two thousand pounds, to E. A. Law (Electric Vehicle), and for vehicles of less than one thousand pounds, to C. J. Field (De Dion-Bouton). Mr. Greuter's



A QUARTET.

time for the climb was 2m. 10s. Mr. Law's was 2m. 45s., and Mr. Field's was 1m. 48s.

PERCENTAGES OF THE WINNERS.

The percentages of the ribbon winners in the endurance test were:		
Operator and Vehicle.	Ribbon.	P. C.
F. W. Walsh (Gasmobile).....	Blue	100
E. Apperson (Haynes-Apperson).....	Blue	100
C. R. Greuter (Holyoke).....	Red	99
C. J. Field (De Dion-Bouton).....	Red	98
H. B. Barruch (Darroq).....	Red	98
E. A. Law (Electric Vehicle Co.).....	Yellow	97
C. Harmes (Daimler).....	Yellow	96
A. L. McMurtry (Ohio).....	White	91

It was the unanimous opinion of competitors that the test had done more for the automobile industry than anything ever devised. The desire was freely expressed that the event be made semi-annual.

Had the day been a favorable one the drivers would have had an enjoyable time, but as it unfortunately turned out the trip was one of much discomfort and those who went the full course returned hungry and chilled, mud bespattered and cramped and thankful only that the test was over. Some of the chauffeurs who had taken lunches were so benumbed and uncomfortable that they left them uneaten and those whose eyes were not well protected suffered severely from the mud and gravel thrown back by the flying front wheels.

The weather held the upper hand with a vengeance and while nine of the fourteen who started conquered the route, they will none of them remember the trip for its pleasure. All the bad weather, how-



HAYNES-APPERSON—A BLUE RIBBON WINNER.

ever, could not entirely spoil the day for those who appreciate a good road, for rather did it emphasize the superiority of fine macadam over a roadbed that would have shown the effects of the rain.

An epoch has been created in American automobile history, young as it is, by the 100 mile endurance test, which was decided recently over Long Island's fine roads, a course that presented everything from a 20 per cent. grade hill to the level. While the test was in no sense a race, as generally considered, there is no questioning the fact that a number of the competitors were in simply to gain speed records

for a 100 mile run. This was shown conclusively by the fact that the auto driven by Ridgeway, and which was purely and simply a racing machine, did the distance from Jamaica, where his start was recorded 9:18:30, to Roslyn, in fifty-eight minutes, the distance being twenty-two miles.

The judges were Malcolm W. Ford, A. C. A.; H. C. Moore and L. A. Hopkins, L. I. A. C. The judges of the hill climbing were A. R. Partington, L. I. A. C.; T. Lananna, B. A. S.; R. E. Jarrige, L. I. A. C.; A. C. A. and W. S. Wintringham, C. A. C. J. C. McCoy, A. C. A., was the referee; F. C. Webb, judge of course, and Waldron Hopkins, L. A. A. C., timekeeper.

Undoubtedly the most interesting test developed by this run was the record of the Daimler Manufacturing Co.'s delivery wagon. This vehicle weighs 3,000 pounds, and is arranged for carrying merchandise.

With a maximum speed of only twelve miles per hour, this wagon made an average of ten miles per hour over all roads and grades through a pouring rain, and the consequent mud, carrying five passengers.

After the run the wagon returned from Jamaica to the factory at Long Island City, without any repair or adjusting whatever. Inspection upon its return to the stable failed to develop even the loosening of a single bolt.

This was the only delivery wagon in the test run, all the others being either light pleasure carriages or racing machines, and the winning of a ribbon in a contest where more than half the vehicles failed to finish, by this wagon, certainly certainly proved that they are "wagons that run."

CHICAGO AUTOMOBILE EXHIBITION.

THE automobile exhibition held in the Chicago Coliseum during the week beginning Saturday, March 23, was notably one of most successful exhibits of its character held in this country. Not only was there a large collection of finished automobiles, but there was in addition a very extensive display of automobile accessories. Then, too, all accounts agree in making this the best sales exhibit yet held.

The opening to the public was on Saturday, March 23, but a private exhibit was held on Friday night, March 22, to which 20,000 invitations had been sent out to leading representatives of social Chicago. Although the exhibit was not fully in order, yet it was in a well advanced state, and the large crowd that visited the Coliseum were well pleased with the show. During the entire week beginning on Saturday the attendance was exceptionally large. The morning assemblage appeared to be composed largely of buyers, while those present in the afternoons and evenings were sight-seers and parties interested in automobiles. Speed trials and free rides kept the track well occupied at all hours of the exhibit. On Thursday evening, the management gave a floral parade, in which over ten vehicles competed for two silver cups. The first prize for the most handsomely decorated carriage was awarded to Robert Shaw's Mobile, with the second prize going to Mrs. M. E. Cook, who drove a Reading steam carriage. The disagreeable weather failed to keep citizen visitors away, while the large numbers from various parts of the country, largely composed of dealers or individual buyers, contributed to the success of the show, both as regards attendance and sales. The following firms exhibited automobiles and accessories.

AUTOMOBILE EXHIBITS.

Auerland Mfg. Co., Chicago, Ill., gasoline automobiles.
 Bachellet automobiles, Winnetka, Ill., exhibited a very handsome electric stanhope. Many strong features. Represented by Otto & Bachellet.
 De Dion-Bouton Motorette Co., Brooklyn, N. Y., exhibited four motorettes, one quadricycle, one tricycle, also engines and other parts for gasoline automobiles, in charge of C. G. Wridgway and Louis M. Grant, western representative.
 Electric Vehicle Co., New York, exhibited three very handsome electric vehicles, one cabriolet, one runabout, one stick seat surrey. Messrs. M. J. Budlong and F. G. Russell in charge.
 Fanning Manufacturing Co., Chicago, Ill., exhibited two very pretty electric runabouts, in charge of Frank and John Fanning.
 Friedman Automobile Co., Chicago, Ill., two three wheeled gasoline runabouts. Messrs. Friedman and Young in charge.
 Hewitt-Lingstrom Motor Co., Chicago, Ill., exhibited six electric vehicles, one twenty-two passenger omnibus, one break, two stan-hopes, one runabout and one delivery wagon. Messrs. R. J. Randolph, T. C. Hewitt and John B. Conrad in charge.
 Knox Automobile Co., Springfield, Mass., three three wheeled gasoline runabouts. Mr. H. W. Davis.

Mayer, Corry & Coulson, Chicago, Ill., exhibited one gasoline stanhope.

The Milwaukee Automobile Co., Milwaukee, Wis., exhibited thirteen very handsome rigs, one stanhope with top, two victorias, one extension top, two surreys, one racer, four runabouts, one delivery wagon, one seventeen horse power truck. In charge of W. H. Starkweather, president; J. H. Dousman, secretary; W. G. Starkweather, treasurer, and Frank P. Illsley, Chicago agent.

The Mobile Co. of America, New York, exhibited seventeen steam vehicles, four buggies with tops, eight runabouts, one dos-a-dos, three panel backs and one victoria with top, in charge of Messrs. Randolph Walker, Robert Shaw, Arthur Adams, W. C. Andrews, Col. Pardee and Carl Fisher.

National Automobile & Electric Co., Indianapolis, Ind. This company exhibited three runabouts, two stanhopes, one break, one large dos-a-dos, one small dos-a-dos, one road wagon and one delivery wagon. L. S. Dow, president; Arthur C. Newby, vice-president; F. M. Hoblitt, sales manager; W. J. Wall, electrical engineer, representatives; Ralph Temple, Chicago, agent.

E. R. Thomas Motor Co., Buffalo, N. Y., exhibited an attractive line of motor tricycles and motor bicycles. E. R. Thomas, E. L. Ferguson, L. Ohnhaus and Marion Black in charge. Ralph Temple, Chicago agent.

Woods Motor Vehicle Co., Chicago, Ill. This well known firm exhibited nine very fashionable vehicles, one each, road wagon, open; road wagon, with top; game trap, break, stanhope, stanhope with rumble, hansom cab, landau and wagonette, with canopy top. The Woods Company are pioneers in the automobile business and they are turning out vehicles that are the highest types of automobiles, beautiful designs and the trimmings and finish are excellent. In attendance were J. Wesley Allison, president; G. H. Atkins, treasurer; J. A. Windsor, Jr., and Samuel Bufkin.

EXHIBITS OF MATERIALS.

Admiral Lamp Co., Columbus, O., combination gas and oil lamps for automobiles. The only one of the kind on the market. Represented by Mr. J. M. Evans.

American Roller Bearing Co., Boston, Mass., a full line of sizes for automobiles and carriages. Western representatives K. Franklin Peterson and W. B. Lucas, present.

American Steel & Wire Co., Chicago, Ill., exhibited magnet and insulated wires for automobiles. Represented by Mr. A. P. Lewald, special agent.

The Automobile & Cycle Parts Co., Cleveland, Ohio, had an elegantly displayed line of automobile parts, also a tubular gear with wire wheels for bike wagons. Represented by Messrs. Garford, president; Wardrop, Cassidy, Wainwright and Barnes.

Badger Brass Co., Kenosha, Wis., exhibited acetylene gas lamps for automobiles, carriages and bicycles. R. H. Wells and L. J. Keck in charge.

Baldwin Cycle Chain Co., Worcester, Mass., exhibited the well-known Baldwin detachable chains for automobiles and bicycles, also cut gears for automobiles. Western representatives present, K. Franklin Peterson and W. B. Lucas.

H. F. Borbein & Co., St. Louis, Mo., exhibited automobile running gears. These gears are having a large sale throughout the country. They are equipped with the well-known Timken roller bearings. They had a good business at the show and received calls from many out of town people who purchased. Represented by H. F. Borbein.

Brooks Motor and Parts Co., Chicago, Ill., exhibited the Brooks hydro-carbon motor. Represented by Mr. Brooks.

Diamond Rubber Co., Akron, Ohio, exhibited single and double tube automobile and bicycle tires, also pneumatic carriage tires. Represented by O. S. Tweedy and J. W. Scott.

The Goodyear Tire & Rubber Co., Akron, Ohio, exhibited a full line of pneumatic tires and their endless solid tire, also rubber belts for autocycles. Represented by Messrs. Charles Seiberling, F. A. Hastings, Dingman, C. D. Mailey, O. O. Ogden.

The B. F. Goodrich Co., Akron, Ohio, exhibited clincher pneumatic and single tube automobile tires. Represented by W. H. Mason.

The Hotelling Bros. Co., Chicago, Ill., attracted much attention by giving a practical demonstration of their superior brazing compound.

The India Rubber Co., Akron, Ohio, exhibited the famous Wheeler endless solid automobile tires and pneumatic automobile tires. They also had on exhibition a battery cell, which is made of rubber, the invention of Mr. C. H. Wheeler, president of the India Company. Represented by Messrs. Claud Platt and J. H. Merrell.

Kelley Handle Bar Co., Cleveland, O., gave a practical demonstration of their generator and burner for steam vehicles. Represented by Charles Weaver.

C. H. Larson, Chicago, Ill., exhibited general supplies for automobiles and bicycles, also motors and motorcycles. Represented by C. H. Larson and J. B. Gant.

The Liberty Bell Co., Bristol, Conn., had a very fine exhibit which attracted much attention and many customers. Their new chime bell has a beautiful tone and wins favor with all automobile manufacturers. Represented by M. J. Horton.

The Midgley Manufacturing Co., Columbus, Ohio, patent tubular steel wheels for automobiles and other vehicles. Represented by Messrs. Frank Merion and Dr. Wissinger.

Chas. E. Miller, New York, automobile and bicycle supplies. Represented by P. J. Dasey.

Moffett Vehicle Bearing Co., Chicago, exhibited a full line of sizes of their bearings from a light vehicle axle to a street car axle. Represented by R. D. Camp, W. G. Van Auker, S. W. Kent.

Munger Vehicle Tire Co., New Brunswick, N. J., exhibited the novel Munger non-collapsible pneumatic tires for carriages and automobiles. Represented by Mr. M. J. Dobler.

New York Belting & Packing Co., New York, exhibited tires for automobiles and carriages. Represented by Frank P. Hayes.

The Porter Battery Co., Chicago, Ill., exhibited batteries for automobiles. Represented by Mr. Fay.

The Reliance Gauge Column Co., Cleveland, Ohio, Reliance low water alarm. H. B. Rose, western agent.

F. Schmitz & Sons, Chicago, Ill., mechanical spring hub for automobiles, carriages and bicycles. Represented by F. Schmitz and G. J. Schmitz.

Shelby Steel Tube Co., Cleveland, Ohio, exhibited steel tubes of all sizes and shapes for automobiles, carriages and bicycles. Represented by E. K. Orr.

Sipe & Seigler, Cleveland, Ohio, exhibited the famous Willard battery. Mr. Willard in charge.

Snell Cycle Fittings Co., Toledo, Ohio, exhibited forged fittings for automobiles. Represented by P. L. Hussey.

The Standard Welding Co., Cleveland, Ohio, exhibited seamless steel rims, cylinders, welded steel stampings and all sizes of seamless steel tubing; a fine exhibit. Represented by Mr. W. Perrong.

Staples & Hanford, Newburg, N. Y., exhibited a line of seat and back springs for automobiles and carriages. Mr. J. A. Staples was in attendance.

B. F. Sweet, Fond du Lac, Wis., exhibited wood wheels with an improved hub well adapted for automobile use. Mr. B. F. Sweet in charge.

Ralph Temple Co., the most progressive automobile men in the West, and who have a very large repository at 293-295 Wabash avenue, Chicago, had a large space, extending nearly across the north end of the Coliseum. Exhibited the following lines, for which they are the Chicago agents: Loomis Automobile Co., Westfield, Mass., two gasoline runabouts.

Reading Automobile & Gear Co., Reading, Pa., running gears for automobiles.

Eclipse Manufacturing Co., Elmira, N. Y., the Morrow coaster brake.

Acme Coaster Brake Co., Rochester, N. Y., Acme coaster brake.

Bundy acetylene gas lamps for automobiles and carriages.

The Century Motor Vehicle Co., Syracuse, N. Y., steam, gas and electric automobiles.

Brown Lip Gear Co., Syracuse, N. Y., spur equalizing gears for automobiles.

Frank Mossberg Co., Attleboro, Mass., automobile bells.

Olds Motor Works, Detroit, Mich., electric and gasoline automobiles.

Eastman Automobile Co., Cleveland, Ohio, exhibited metallic bodies for automobiles.

Patee Cycle Co., Indianapolis, Ind., Patee motorcycle.

Adams Co., Dubuque, Ia., gradometer.

Peter Ford, Somerville, Mass., steam boilers.

Steam Carriage Supply Co., Oswego, N. Y., Tonkin boilers.

Clark Bros. Co., Vicksburg, Mich., the Clark regulation alarm column.

Crest Manufacturing Co., Cambridgeport, Mass., gasoline motors.

Brennen Manufacturing Co., Syracuse, N. Y., gasoline motors.

Richmond Automobile Co., Richmond, Ind., twin cylinder, double acting steam engine without eccentrics.

Ralph Temple was assisted by his brother, Chas. Temple, in charge of the exhibit.

Twentieth Century Manufacturing Co., New York, exhibited a full line of acetylene automobile, carriage and bicycle lamps. F. E. Castle in charge.

The United States Ball Bearing Co. exhibited ball bearings and knuckles for automobiles. Represented by J. A. Blechner.

The Veeder Manufacturing Co., Hartford, Conn., exhibited cyclometers and odometers. In charge of D. J. Post.

VISITORS.

Among the visitors were: Mr. A. C. Vosburgh, secretary of the New Process Raw Hide Co., Syracuse, N. Y.

Mr. D. L. Whitford, Seattle, Wash.

Mr. H. H. Hart, of the Seamless Steel Tube Co., Detroit, Mich.

Mr. Volney S. Beardsley, treasurer and manager of the Beardsley & Hubbs Manufacturing Co., Mansfield, Ohio.

Mr. F. X. Frantz, of the Frantz Body Co., Akron, Ohio.

OF INTEREST TO TOURISTS.

THE Geneva Automobile & Manufacturing Co. are fitting up at their factory, opposite the L. S. & M. S. R. R. passenger station in Geneva, Ohio, a storage room for motor vehicles, where tourists can store their machines over night without charge. Steam, water and gasoline can be had, and if any repairs are necessary they can be done in a first-class manner at a minimum cost.

AN AUTOMOBILE SUPPLY CATALOGUE.

J. H. NEUSTADT Co., of St. Louis, Mo., have forwarded us one of their catalogues of automobiles and supplies. In looking it over we find almost every possible device required for building automobiles, as well as care of the same. This house manufactures extensive lines, and carry in addition stocks manufactured by other houses. Carriage builders interested in automobiles will find this catalogue valuable in the event of putting up steam or gasoline carriages. Send for a copy.

The Chauffeur's Tip.

UNDER this heading the "Chauffeur" will attempt to give from month to month information of interest to dealers and clubs, and also to owners of automobiles.

AUTOMOBILE CLUB PIN.

THE most stylish club pin I have seen so far is the official badge of the Automobile Club of America, an illustration of which is given below. The design was copyrighted, 1900, by Theodore B. Starr, Madison square, New York. The name is a guarantee of quality of material and excellence of workmanship. These badges are made in



CLUB PIN.

three different styles. In one style the entire pin is made of solid gold with the enameled lettering in blue. There are two other styles differing only in the material of which the "tire" is made, one having a silver, the other a platinum tire. The backing to the badge is a square piece of red, white and blue striped ribbon. The detail of the badge has been very carefully followed out, even the valve of the tire is reproduced, and the hub is brought out prominently, the whole scheme being a proportionate reproduction of an actual full size automobile wheel.

POPULAR CAPS.

THE two most popular types of caps for summer use will be the black silk and the khaki. Demmerle & Co. have added colored kid to their line, and now make caps in red or any color. Ideal kid and a pure white kid, for ladies' use, are the most beautiful. They also make the black silk in a waterproof gros grain and a khaki, both in two oz. weight.

COST OF OPERATING AUTOMOBILES.

The question of the cost of operating automobiles is such an important one, and has been guessed at and speculated upon by so many designers and builders, that exact figures compiled from actual runs of a standard make of carriage are very acceptable.

Through the courtesy of the Daimler Manufacturing Company of Steinway avenue, Long Island City, N. Y., *The Hub* is able to give the following data. These figures are taken from the report of the tests of the Daimler Model, 22, made by one of the largest department stores in Greater New York. In the two tests quoted there was an operator familiar with the carriage and a delivery boy acquainted with the routes.

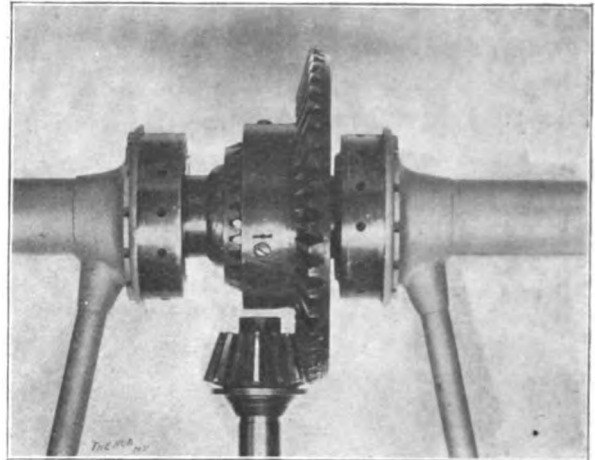
The first test covered 30 consecutive working days. The odometer showed a total of 808 $\frac{3}{4}$ miles, with a total consumption of 83 $\frac{1}{2}$ gallons of gasoline. Three thousand nine hundred and twelve deliveries were made. The gasoline cost 8 $\frac{1}{2}$ cents a gallon in bulk. This shows a trifle over 9.2 miles for a gallon of gasoline, or a net cost of less than one cent per mile. To be exact a cost of .828+ of a cent per mile or a cost of .181+ of a cent a delivery. The above test was on city routes.

The second test was six days on suburban delivery. The odometer showed a total of 290.5 miles, and 31.5 gallons of gasoline were consumed. Only 440 deliveries were made. This also shows over 9.2 miles on one gallon of gasoline, and indicates that the variation in road between ordinary city street and suburban road work is very slight; also that there is very little difference between short and long run trips in the per mile costs of operating.

The delivery wagon used in the tests weighed 3,175 lbs., and had a maximum carrying capacity in addition to the crew of two of 1,500 lbs.

"CENTURY" TRANSMISSION GEAR.

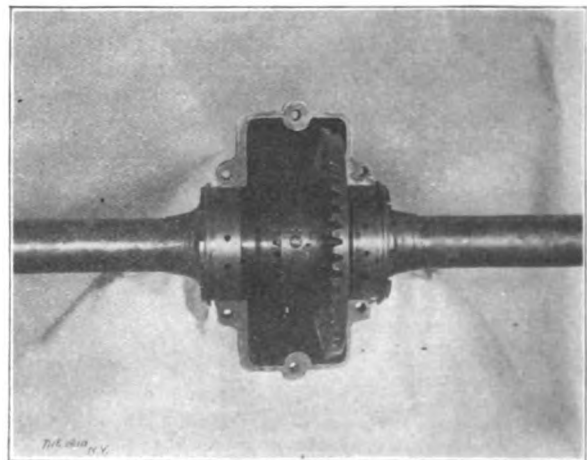
CONSIDERABLE interest has been aroused among builders and users of automobiles in the comparison of different methods of transmitting power from the motor or engine to the driving wheels, and in reply to some questions which have been asked we give some of our views and experience herewith. We have not attempted to make the discussion exhaustive or go into details which would be interesting only to trained mechanical engineers. In this comparison we make account of nothing except the very best construction of either kinds, as



GEAR AND SHAFT EXPOSED

cheap or flimsy installation of either chain or gear transmission is not worth consideration.

It is true that the use of gear transmission by the manufacturer involves considerable larger investment in machinery than would be the case with other methods, as machines for correctly generating bevel gears cost several thousands of dollars each and are expensive to install and operate; but we believe mechanically perfect gears furnish approximately perfect means of transmitting power. Properly proportioned, they roll together practically without friction, noiselessly, and are perfectly positive. In stopping quickly or reversing there is no slack to take up and the customary jars or jerking motion of the chain or other mechanism under the same condition is thereby avoided; .001 of an inch wear on each link of an ordinary chain makes over $\frac{1}{4}$ inch in the length of the chain customarily used on automobiles. Thus the pitch of the chain is changing in one direction, while the wear on the sprocket causes its pitch to change in the other direction. If the chain is correct when it is new, it is evidently not correct after it has been run a short distance. This has been discovered by manufacturers of agricultural machinery, the best of whom have for some time adopted the practice of making a chain with less pitch

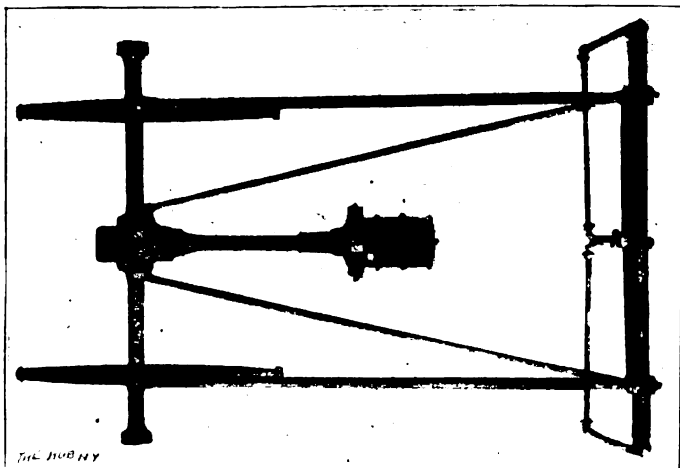


GEAR IN HALF OF CASE.

than the sprocket, so that at some time in its history it would wear to approximately the correct pitch. On the other hand, the wear in the teeth of good gears is practically nothing, and what infinitesimal wear occurs is in the same direction on both gears. Taking up the slack of the chain does not correct the pitch, whereas gears can

be adjusted, after any period of wear, so that they will mesh as properly as at first.

Of course, perfect operation implies proper mounting and provision adjustment. The method adopted in the "Century" carriage is to mount the large bevel gear directly on a shaft which runs through from end to end of the rear axle. This, in effect, provides the gear with a hub 5 ft. long, which, obviously, will keep it forever true. The driving pinion which meshes in this gear is held in position by the gear case, and between the case which encloses the driving shaft acts as a distance piece between the gear and the engine of the steam carriage, or the motor of the electric carriage.



GEAR AND CARRIAGE PART.

A discussion of the best materials for gears and pinions or the dimensions and mechanical drawings of same would be out of place in this article, but it goes without saying that "the best is the cheapest" and that no one should attempt to use bevel gears unless he is qualified by mechanical training to make them perfect, and is prepared to make the necessary investment in material and tools. Another advantage in the "Century" construction is that it affords the opportunity to mount a brake wheel on the drive shaft and to operate a double shoe brake gripping both sides of the drive wheel with equal pressure, so that there is no uneven pressure on any of the bearings, and no tendency to draw any of the shafting or other parts to one side, as is commonly the case with other forms of brake. We can only add that our experience has justified expectation and the gears in use for a long time show no wear and require very little attention for lubrication. One gear now on hand has driven a carriage about 4,000 miles, and has never required adjustment since it was first installed.

MAY CONFISCATE AUTOMOBILES.

CUSTOM HOUSE authorities reported on April 6 for forfeiture to the United States District-Attorney the automobiles recently imported from Paris by a New Yorker. Although they will be confiscated if the owner loses the case, no criminal proceeding will be taken against him, owing to the fact that needed witnesses are in France, and the presentation of depositions from them will not suffice for conviction.

THE MAN WITH A PULL.

'Tis not the man of valorous mood,
All ardent for the fray,
Who is most certain to secure
Men's plaudits, day by day.
Some men may toil and shear the sheep
While others get the wool.
The worker oft must yield unto
The man who has a pull.
And yet the one who glory holds
Beyond his rightful share
Must feel he sits beneath a sword
Suspended by a hair.
And he who leads a placid life
Of honest effort full
Need feel, perhaps, no envy of
The man who has a pull.

—*Washington Star.*

AMERICAN COMPETITION WITH EUROPE.

A GERMAN VIEW OF INDUSTRIAL AND COMMERCIAL PROGRESS IN THE UNITED STATES.

In a recent issue of the Hamburg *Fremdenblatt* there appeared a somewhat remarkable article, entitled "The American Danger," which, taking for its text the annual report of the treasurer of the United States upon the fiscal condition of the country and the recent statistics regarding the growth of American export trade, went on to comment at some length upon the significance to Europeans of these facts. A translation of some of the more noteworthy passages of this article is here appended:

"The steel manufacturers of the United States, which two decades ago were in their infancy, to-day control the markets of the world. dictate either directly or indirectly the prices of iron and steel in all countries, and, partly through the richness of their supply of iron ores and coal, partly by the use of labor saving machinery and skillful, effective means of transportation, have attained a position not only to compete with the older iron and steel producing countries, but even to profitably export their products to England.

"American tools, especially hatchets, axes, files, saws, boring implements, etc., enjoy by reason of their excellent quality the best reputation, and, in spite of their higher price, stand above competition in nearly the whole world. Also in sewing machines, bicycles and agricultural implements of every kind, the United States has begun to drive England and Germany from the world's markets, especially that of Russia.

"Incidentally, it may be remarked that the typewriting machine with which this article is written, as well as the thousands—nay, hundreds of thousands—of others that are in use throughout the world, were made in America; that it stands on an American table, in an office furnished with American desks, bookcases and chairs, which cannot be made in Europe of equal quality, so practical and convenient, for a similar price. The list of such articles apparently unimportant in themselves, but in their aggregate number and value of the highest significance, could be extended indefinitely. But it would seem more interesting and characteristic to cite the fact that an American syndicate is now planning, and has even taken the initial steps in a scheme to take in hand the whole sleeping car service of Europe, to improve it and make it cheaper than is now possible.

"But enough of examples. Everyone who understands the existing conditions and has followed these conclusions drawn from the best sources and based upon thorough knowledge of the facts, will agree that the threatened danger from America is neither exaggerated nor painted too darkly, but is, in fact, real and serious. But the mere recognition of the peril avails nothing; what is demanded is to face it, to overcome it, or at least to minimize as far as possible its effects. We must ask ourselves whether this is still possible, and if so, what are the means, the methods, that must be employed to secure a successful result. There is but one answer to this question. We must fight Americanism with its own methods; the battle must be fought with their weapons, and wherever possible their weapons must be bettered and improved by us. Or, to speak with other and more practical words, Germany—Europe—must adopt improved and progressive methods in every department of industry; must use more and more effective machinery. Manufacturers as well as merchants must go to America, send thither their assistants and workmen, not merely to superficially observe the methods there employed, but to study them thoroughly, to adopt them, and wherever possible to improve upon them, just as the Americans have done and are still doing in Europe."—*The American Exporter.*

WOOD STOCK ASSOCIATION HOLDS MEETING AT GRAND HOTEL.

At the meeting of the American Vehicle Wood Stock Association, held at Cincinnati April 10, and attended by twenty-five members from Mississippi, Tennessee, Kentucky, Indiana, Illinois and Ohio, it was agreed that prices fixed at the previous meeting should be stiffly maintained. It was also agreed to appoint an agent to be paid out of a percentage of the sales of the members of the association to look after its interests and solicit membership throughout the territory. Peter Lerch, of Jackson, Tenn., was chairman of the meeting, and M. J. E. Busher, of Louisville, secretary. Another meeting will be held in Cincinnati some time in May. Business was reported as quite active and export trade increasing.

DAIMLER DELIVERY WAGON.

(See "Latest Styles.")

THE business wagon illustrated herewith is manufactured by the Daimler Manufacturing Co., of Steinway, L. I. One of these was in the one hundred mile test run on Long Island, and won one of the club prizes, and made the entire run and returned to the stable without the slightest mishap or damage, everything being in as good order at the finish as at the start.

GROUT BROS. STANHOPE.

(See "Latest Styles.")

GROUT BROS., of Orange, Mass., manufacture the steam wagon illustrated this month. This company's vehicles are built with an idea of obtaining the best possible results in the simplest manner, the mechanical construction being of a high grade, the vehicle being in every respect safe and reliable.

KEYSTONE GOLF AUTOMOBILE.

(See "Latest Styles.")

THE Keystone Motor Co., of Philadelphia, are among the builders of special motor vehicles, one of which is shown this month.

LOOMIS AUTOMOBILE CO.'S PARK WAGON.

(See "Latest Styles.")

THIS light park wagon is built by the Loomis Automobile Co., of Westfield, Mass., and is intended for city and park use. The frame is constructed of steel tubing and has double rows of ball bearings throughout, including steering device. It is equipped to run 150 miles without refilling. No water is used in the carriage.

ROCHESTER "RUNABOUT."

(See "Latest Styles.")

THE Rochester runabout is a steam propelled automobile of high grade, made of the best of material and by skilled mechanics; simplicity and durability have been studied in its construction. The running gear is of best weldless steel tubing. The wheels are 28 inch, 2½ inch pneumatic tires. The body is roomy and lined inside with asbestos. The engine is 4 h. p., two cylinder reversible type. The boiler is of seamless steel, tested to 600 CW. and 400 lbs. steam pressure. The fuel is gasoline, six gallons supply sufficient for fifty miles run. The vehicle is finished in the best style, address Rochester, N. Y.

STEAM PHAETON.

(See "Latest Styles.")

THE steam phaeton illustrated this month is from the works of the Steam Vehicle Co. of America, of New York City. This is one of the leaders among steam automobiles, being constructed in the best manner in every respect. The design is attractive and the body is roomy and comfortable.

WILL REMOVE TO UTICA.

THE Remington Automobile Co. of Ilion, N. Y., is hastening its preparations to establish its plant in Utica. A lease has been closed for a year for the use of the building on the east side of First street, between Mary and Blandina streets. It is three stories in height, 35x100 feet. It is proposed to remove the machinery from Ilion to that city as quickly as possible. It will be temporarily set up in the building referred to, there to be operated until the new building for the plant is erected and ready for occupancy. Mr. Holmes, the general manager of the company, hopes to have the machinery running in the temporary factory here by the 10th of May.

Louis Graham of Utica has taken an interest in the new company, and will in all probability be chosen treasurer. He proposes to identify himself with the concern and devote his entire time and attention to its business interests.

TO BUILD LARGER.

THE monthly business meeting of the directors of the Geneva, Ohio, Automobile & Manufacturing Co. was held Monday afternoon, April 8. The meeting was an important one, as, in addition to the transaction of much other business, the question of building the large addition was thoroughly discussed, after which the following resolution was unanimously passed, which in itself is a flattering compliment of confidence paid by the directors to President Carter and Superintendent Thompson:

"That our executive committee be authorized to have plans and specifications prepared for an addition to our present plant of a three-story building 40 x 180 feet, also to raise the ell which would run between the present building and the new building one story, if thought desirable, and to receive bids and let contract for same also, that the president be authorized to purchase and have set a new 100 horse power boiler, together with such additional machinery as the superintendent and president shall deem it necessary to purchase."

The first "Geneva" is about completed and contains many features not found in any other steam wagon.

WILL GO TO BUFFALO.

NEW YORK MOTOR-VEHICLE Co. purposes sending their Twenty-passenger steam omnibus, using kerosene oil fuel, which was exhibited at the Madison Square Garden show, to the Pan-American Exposition under its own power. It is 20 ft. 4 in. long, 8 ft. 2 in. wide, and 10 ft. 2 in. in height from the ground. It has heavy solid forged steel axles, with Archibald artillery hubs, heavy wheels with 3½ in. solid rubber tires, and weighs, loaded, ready for use, 3½ tons. The windows at both sides are removable for summer use. The ventilator on the roof can be removed and a railing extended around the top, and then top used for carrying baggage. This omnibus is operated by steam generated in a "Climax" safety water tube boiler. This boiler has the advantage of a greater circulation than any other boiler, and will therefore generate sufficient steam to start the vehicle in less time than any other. The boiler is tested to 600 pounds to the square inch before being placed in use. The fuel used is kerosene, which is non-explosive and costs less than gasoline; 2½ gallons, approximately, is consumed in the operation of the 'bus, loaded, per hour.

AN AUTOMOBILE STATION.

AN automobile station has been established in the old Stratford stables, at Twenty-third and Walnut streets, Philadelphia. This station will be conducted in connection with the automobile department in Wanamaker's store. A feature of this proposed station will be an automobile driving school, where persons can receive instruction in the operation of this class of vehicles. Experienced operators have been engaged, and it will be one of the most complete places of its kind in the country.

CUNNINGHAM ENGINEERING COMPANY.

THE property of the Cunningham Engineering Company has been purchased by the Massachusetts Steam Wagon Company, the transfer of the same bearing date of March 1st, and from the date of March 1st the Massachusetts Steam Wagon Company takes up the manufacture of steam wagons previously conducted under the name of the Cunningham Engineering Company, and assumes all bills from that date.

A PHILADELPHIA AGENCY.

THE Quaker City Automobile Co. have recently purchased the business and location of Maurice Loeb at 306 North Broad street, and have secured the agency for Philadelphia and vicinity of Duryea vehicles, which they intend making their leader in the gasoline line.

INCREASE IN STOCK.

THE Conrad Motor-Carriage Co., of Buffalo, N. Y., has filed a certificate with the county clerk, showing that its capital stock had been increased from \$25,000 to \$75,000.

INCORPORATION PAPERS FILED.

THE Shepherd Engineering & Automobile Co., Camden, N. J., has filed articles of incorporation. The capital stock is \$600,000, with \$1,000 paid in.

Items of Interest.

DEMAND FOR TRAINED MECHANICS.

It is hardly necessary at this day to present an elaborate argument that an increase in the efficiency of the workmen in an industry must, of necessity, prove of great value to that industry, and that anything that tends to increase the knowledge of the subordinates, from whose ranks future foremen and superintendents must be drawn, cannot fail but result to the advantage of the employer, in increased profits, through the more intelligent and economical management of the plant. It is the shop which can build the best machinery at a less cost than others which is sure to be successful; and to secure this the management must depend upon no man more than the shop foreman. He must ascertain all possible legitimate ways and means for reducing shop costs, stopping leaks and losses without reducing the manliness of the men and the standard of the work. How many men of this kind do we get, and what opportunity is there to-day for training for such positions? This great and growing demand for technically trained men opens to young men who will fit themselves to be mechanics, and who, in turn, can fit themselves for employers, forces the question, How can these demands be best met? The answer is, By home study or in a correspondence school.

The various engineering colleges are open to but few. Night schools are found only in the large cities. The American School of Correspondence system of instruction by correspondence fully meets the requirements of the wage-earners by supplying the education for which employers are willing to pay, and pay well.

It makes no difference where the student may be; whether in the same building with the school or in another continent, wherever the mails go he can carry on his studies. This offers ambitious young men in foreign countries an opportunity for getting a technical education that has never been available before.

The American School is located in Boston, a recognized educational and industrial center, the home of three of the foremost technical schools of the United States. This gives unusual opportunities for keeping in touch with the latest developments in both the practical and theoretical sides of the courses taught, and for securing the highest talent for the instruction staff. The school is not intended to take the place of a residence school, but to enable that class of ambitious people who have no opportunity to attend a residence school to pursue—under the guidance of able instructors—studies during their leisure moments which they feel to be of value in their daily lives.

The courses are limited to steam, electrical and mechanical engineering (and allied subjects), and mechanical drawing, thus securing all the advantages of specializing. The instructors are graduates of the leading scientific schools, a large number being regular teachers in two of the great technical schools of Boston.

The members of the advisory board are well-known authorities on steam and electricity, and frequent contributors to the engineering journals. Another valuable feature of the school is the special inquiry department. By taking advantage of this department the students can secure the opinion of an expert consulting engineer without extra charge. Oftentimes the advice of the experts on the many troublesome questions arising in the engine room or machine shop will save many dollars. This in itself is a most valuable privilege, especially to foreign students, placing at their disposal expert advice that could not possibly be obtained in any other way, until better opportunities are offered in foreign countries.

AUBURN BALL BEARING CO.

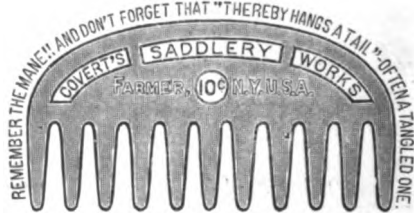
THE Auburn Ball Bearing Co., of Auburn, N. Y., are manufacturers of ball bearings suited to all wants where friction is to be overcome. These are arranged for shafting, pulleys, light and heavy machinery of all kinds, also for trucks, carriages and automobiles. They manufacture a steel hub for carriages and automobiles that has the appearance of a plain wood hub, the whole principle of which is so novel that we recommend our readers to obtain a copy of their illustrated catalogue, just issued. You will find in it illustrations showing the ball bearings applied to automobile rear driving axle and a score or more of different uses too numerous for mention in our columns. Every man interested in anti-friction bearings for any purpose should obtain a catalogue.

MEYER'S THREADS AND SPOOL SILKS.

THOSE who have not used the Meyer threads and spool silks will no doubt be pleased to receive a sample line of various sizes and colors they manufacture. This firm have manufactured spool silks and threads for the past twenty years. They were the first to introduce a thread that will not fade or rot, like the old-fashioned threads. Some people say that the old-fashioned threads are the best, but as Messrs. John C. Meyer & Co. are a young hustling house, they are always getting up new ideas in the thread line. They put up a thread that runs free from bunches and knots—a thread that they assert will get over and do more work than any other upon the market. They also furnish ready wound bobbins to fit all styles of sewing machines, also sewing silks, put up in black, white, and all the leading colors, to match whip cords as well as drab and other cloths used by carriage manufacturers. So well satisfied is this house of the qualities of their threads, silks, etc., that they will send samples free of any size and color if you will send a sample of the cloth you want to use. No fairer proposition can be made. It costs nothing to sample their threads and silks, and the man who won't take advantage of that offer evidently is wanting in business acumen.

COVERT'S PERFECTION MANE AND TAIL COMB.

COVERT'S Saddlery Works, of Farmer, N. Y., manufacture, in addition to their extensive line of neck yokes and centers, illustrated on



MANE AND TAIL COMB.

another page, a line of accessories handled largely in carriage repositories. Their No. 21 catalogue is now ready for all who ask for it.

OIL VARNISH.

THE Peckham Varnish Co., of Boston, are putting a new varnish on the market, one made from pure oil and containing no gums or rosin, which flows well and dries hard with a brilliant gloss. While a varnish of this nature is new to the trade, it has long been in the minds of the varnish makers throughout the country, and many so-called oil varnishes have been on the market, but have not stood the test. From reports which have been submitted to the Peckham Co. in regard to their new venture, it would seem that they have an article which fills the bill in every respect. Their plant is in charge of a man who has been connected with the manufacture of varnish for upward of forty years, and who has worked on their oil varnish formula for about twenty years, improving and testing it, and now they are in position to enter into communication with all consumers who desire high grade and durable varnish.

DASH AND FENDER CATALOGUE.

THE McKinnon Dash Co., headquarters Buffalo, N. Y., have issued their dash catalogue for 1901, in which they illustrate about 125 dashes and fifty wings and fenders for carriages and automobiles, together with dash feet and other specialties. The quality of this company's work ranks high in the carriage trade, and a mere mention of the fact that their new catalogue is ready is enough to induce the trade to get a copy from which to select styles.

GET A COPY.

C. COWLES & Co., New Haven, Conn., are sending out their general catalogue of carriage hardware and trimmings, a volume of 130 pages fully illustrated, showing about 200 distinct articles, together with prices, etc. It is a good thing to have handy when ordering stock.

SOME people get the reputation of being patient because they are too lazy to kick.

CRESTOLINE.

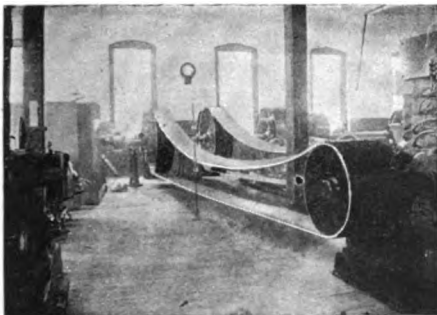
THE Crest Manufacturing Co., of Cambridgeport, Mass., are putting on the market a special gasoline motor lubricating oil called Crestoline. Every user of a motor is well aware that the most serious troubles that can happen to a motor is the use of improper lubricating oil for the cylinders. The conditions under which a high-speed gasoline motor works, more especially of the air-cooled type, demands perfect lubrication unknown in any other form of engine or motor. The enormous speed, combined with the intense heat of the explosion, with the high existing temperature of the motor, requires a lubricating oil especially made for this service. The oil companies, on account of the limited demand and also on account of the great expense to produce a special oil for this purpose, has as a substitute been furnishing the best and most expensive engine oils for this class of work. These oils are not adapted for this purpose, as they are a compound oil using animal and vegetable compounds, causing a fouling of the cylinder and sparking plugs. The only lubricating oil that can be used is an oil of extremely high viscosity, and one that can stand the very high temperature. This is made by blending of mineral oils only, and after a great deal of experiment we are able to assure our customers that Crestoline is the only type of oil adapted for this purpose. It is well known that more motors are ruined from the use of lubricating oils which are not adapted for this class of service than from any other known cause, and experimenting with poor oils is exceedingly dangerous, not only from the fouling of the cylinders, but the destruction of the working parts by cutting. Crestoline keeps the motor cool, it stops overheating and the danger of pistons sticking, and prevents the motor from losing power. One of the advantages of Crestoline is that it has a great body in summer and a liquid quality in winter. It is put up in one gallon cans, and will be shipped by express on receipt of one dollar.

THE STANDARD WELDING CO.

THE above named company is located at Cleveland, O., where they make a specialty of welding by electricity all kinds of stampings, drop forgings and tubes, together with the manufacture of seamless steel tubings, cylinders, rims, etc., for automobiles and carriages. Their catalogue No. 4 for 1901 is out, and all interested in the lines of work produced by this company should get a copy, as it not only shows illustrations of some lines of their work, but it also gives prices of rims, tubing, etc.

A BETTER BELT SERVICE.

CLING-SURFACE, made by the Cling-Surface Manufacturing Co., of Buffalo, N. Y., is a filler and preservative for belts. The makers guarantee the following results: Permanent stoppage of belt slipping. As a result of this the belts can be allowed to run easy, thereby developing an increased arc of belt and pulley contact, which, with

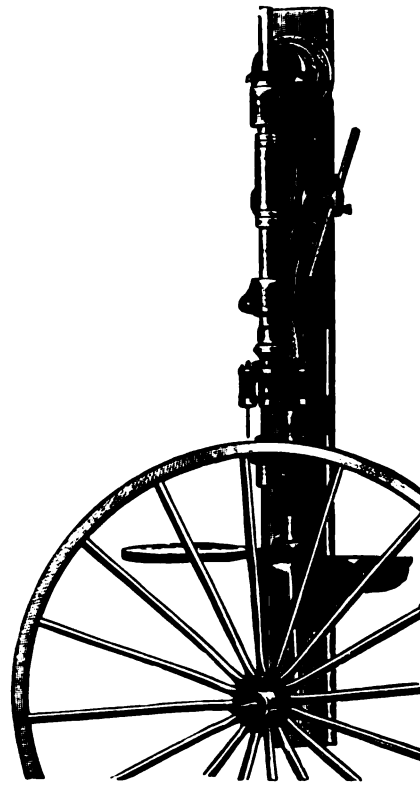


CLING SURFACE BELT.

the impossibility of slipping, increases the transmitted power considerably. With the easy belt heating of bearings does not occur. The belts cannot run off, for they cannot slip; and cling surface will make and keep belts pliable, elastic, waterproof and in perfect condition. The article being a filler, the belt surface is not at all sticky and can be kept clean. It is also reported as being successfully used to prevent the slipping in the leather disk of automobile variable-speed devices. They will exhibit the Cling Surface in the Pan-American Exposition Machinery Building.

TIRE DRILLING MACHINE.

THE George Burnham Co., of Worcester, Mass., have produced a tire drilling machine that cannot fail to meet the requirements of the carriage trade. It is fitted with Stone's patent turret for the quick and accurate drilling of tires. This turret holds the necessary drills and countersink, and the machine does not have to be stopped to change from one drill to another. It is very simple in mechanism and operation; instantly locks itself onto the drill-spindle as soon as the lever is drawn down. When the lever is raised, it releases at once, and a slight touch brings into place another drill or countersink. Another valuable feature in this machine is the block the felloe rests on while being drilled. The block being just the length of the felloe-plate between holes, all that is necessary is to place the joint at one end of the block and drill a hole, place the joint at the other end



TIRE DRILLING MACHINE.

and drill the other hole, and the plate slips on easily and no marking is necessary. The screws in the block will adjust the tire so the holes will come exactly in the center. The tire can be drilled, countersunk, and the felloe bored without moving the wheel. This turret is also made with four and five heads and greater swing, so it may be used for all sorts of drilling in carriage and machine shops. Where a man is constantly at the drill, at least one-quarter of the time may be saved by using one of these turrets, for he can see his drills, and a slight touch places either size in use without stopping. Universal chucks to hold $\frac{3}{8}$ in. and under are fitted on two of the spindles, and the third is bored out $\frac{1}{2}$ in. to receive the countersink. The regular spindle can be used without the turret just the same, if so wanted, or the turret can be removed in an instant, and as quickly put in place. Diameter of spindle, 1 5-16 in.; length of spindle, 28 in. Will drill hole to center of 16-in. circle, $5\frac{1}{4}$ in. deep. Greatest distance from spindle to table, 23 in. This drill has lever feed, which can be adjusted to any position of the drill. The countershaft, with hangers, has a three-step cone pulley, and a 7-inch tight and loose pulley for $2\frac{1}{2}$ in. belt.

AN ATTRACTIVE CATALOGUE.

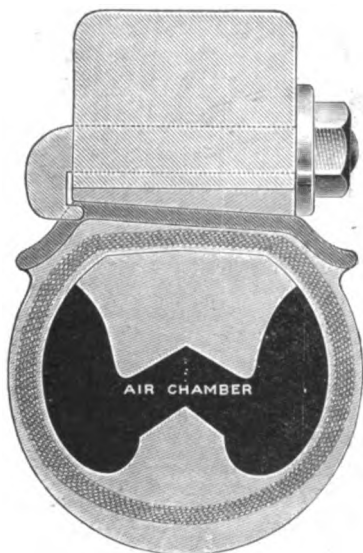
THE Cortland Cart and Carriage Company, of Sidney, N. Y., have issued a very neat and attractive catalogue for 1901, having a neatly embossed cover in gilt and colors, showing about forty styles of carriages built by them, consisting of top and no top buggies, top and no top surries, buckboards, two and four passengers; Concords, grocery wagon and spring cart. The styles are attractive and dealers should procure a copy of this catalogue before placing their season's orders,

HAY-BUDDEN MANUFACTURING COMPANY'S NEW PLANT.

THE new plant of the Hay-Budden Manufacturing Company, manufacturers of wrought-iron, steel-faced anvils, and die and steel forgings, to take the place of the one destroyed by fire in March of last year, is a large and commodious iron structure, covering, with an adjoining yard, three acres of ground. The front of the first floor is given up to offices and shipping rooms, over which are other rooms for office use. The machinery, consisting principally of large and powerful steam and hydraulic hammers, which, together with the many furnaces, the steam engines, boilers, shafting, blowers, etc., are modern, and represent an investment of hundreds of thousands of dollars. The Hay-Budden Manufacturing Company is the largest manufacturer of anvils in the world, and the maker of the first solid wrought anvils with steel face in one piece, made in the United States. The history of the anvil industry in this country is largely that of this enterprising pioneer concern. This company was founded about eleven years ago on a small scale on Frost street, Brooklyn, by James Hay and Frederick C. Budden, who personally worked at the forge, and were aided by a few helpers. The manufacture of anvils began in 1893, when the business was incorporated, and Walter F. Reny became connected with the house. The Hay-Budden anvil is strictly an American product, in iron, steel and labor. They have won such a high reputation throughout the world that they are preferred to others. The United States Government uses these anvils exclusively in place of the imported heretofore. Every Hay-Budden anvil is warranted and stamped with the company's name.

MUNGER PNEUMATIC TIRES.

THE Munger pneumatic tire, illustrated herewith, is of peculiar construction, having an air chamber and rubber buffers, so arranged as to prevent a collapse of the tire if the air is exhausted from any



MUNGER PNEUMATIC TIRE.

cause. The company have made numerous experiments and tests, and claim from the results of these that the tire is all that has been claimed for it. Those interested should send to the Munger Vehicle Tire Co., New Brunswick, N. J., for a catalogue.

SHELBY STEEL TUBE CO.

THE above named company announce that the increasing volume of their business and the great demand for their high class cold drawn seamless tubing necessitates an immediate enlargement of their selling facilities to meet the requirements of their trade. They have been steadily improving and increasing their manufacturing facilities, and have still other and larger improvements under way. Consequently they are in better shape than ever before to promptly handle any orders that may be entrusted to them, while, at the same time, giving the highest quality of tubes ever produced in the United States. They claim that their product is so much superior in every way to the ordinary lap or butt welded tube, that no

comparison is possible in quality. For the expeditious handling of their business and the convenience of their customers, they have arranged so that all inquiries and orders in the States west of New York, Pennsylvania, West Virginia, Virginia, North Carolina, South Carolina, Georgia and Florida should be addressed to their Chicago office; all orders and correspondence from the States above mentioned, also the balance of the New England States and Canada, should be addressed to their New York office, New York and Chicago being their main selling offices. They have also arranged to carry a stock of tubes in their own store in New York City, thus enabling them to make quick delivery of their products to all Eastern and Southern customers. Their Western trade will be promptly supplied from their mills in Toledo, O.; Greenville, Pa.; Albany, Ind., and Ellwood City, Pa., and they have further arranged to substantially augment the stock of finished products at all of their mills. This company is now the largest manufacturer of seamless tubing in the world, and they propose to enlarge their facilities materially all along the line in the shortest possible time, and hope by prompt service, personal attention and unequalled quality to merit a large share of business. Their cold drawn seamless tubes are now the acknowledged standard of excellence for locomotive, marine and stationary boilers. They are also the largest manufacturers of seamless tubing for mechanical purposes and for automobile and bicycle construction.

A CHANGE OF OWNERS.

THE entire capital stock, factory, and real estate of the Duff Manufacturing Co., of Allegheny City, Pa., has been purchased by Mr. J. R. McGinley, of Pittsburg, Pa. The Duff Manufacturing Co. manufactures the well-known Barrett automatic lever jack. Mr. McGinley, who is one of the foremost business men and financiers of the city of Pittsburg, and who has for about twenty years been prominently identified with the Westinghouse interests, will take personal charge of the management of the Duff Co. He will make a number of improvements in the factory, so as to greatly increase the capacity of the present plant, and he is about to conclude arrangements for the sale of the company's product in foreign countries. Mr. McGinley is also interested in the R. D. Nuttall Co., of Pittsburg.

A PROSPEROUS DEALER.

Roscoe Benjamin, Winsted, Conn., an energetic up-to-date carriage and harness dealer, sold his beautiful pair of advertising gray ponies, San Sebastian, 2:20 $\frac{1}{4}$, and Dandy, 2:20 $\frac{1}{4}$, over half-mile track, and considered the finest matched team of fast horses in New England, to a wealthy man in Providence, R. I.; also a pneumatic surrey, harness and complete appointments. This rig is without doubt the finest ever sold in the State, and a great credit to any city. Mr. Benjamin is making a special point of having a few choice ponies and single drivers that can win in any company on hand, and is ready at all times to buy a high class horse.

Owing to his large growing business, he is having plans drawn for a large five-story brick repository, to join his large two repositories now, making his establishment the largest and most complete in the State. He carries all kinds of vehicles and no city in the State can show a slicker line of goods. He is getting trade from all over New England, which speaks well for his progressive business ability. His new repository will be in ship-shape about May 15th, and a credit to the trade. He handles work from almost all the builders in the country, and is always looking for something new and ahead of the game. All the traveling boys are always welcome at his repository.

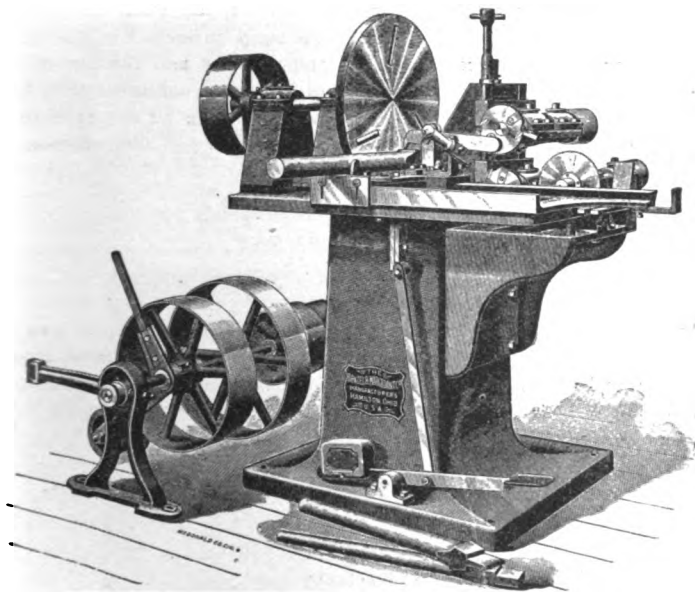
FROM BICYCLES TO TUBULAR VEHICLE GEARS.

HARRY CASSADY has resigned his position as manager of the Milwaukee bicycle factory of the American Bicycle Co. to become sales manager of two of the largest plants owned by the Automobile & Cycle Parts Co., namely, the Smith Stampings Factory, in Milwaukee, and the Thomson factory, in Chicago. Mr. Cassady has complete charge of the latter establishment, which, by the way, makes hardware specialties of a variety little known to those who have come to look upon its products as being confined exclusively to cycle parts. The making and marketing of curling irons, nut crackers, metal hat, towel and coat racks, tracing wheels, stove

pokers, glove and shoe buttoners, and a long list of other specialties will occupy no small part of Mr. Cassady's time, but as his apprenticeship was spent at that form of work (he was one of Hibbard, Spencer & Bartlett's crack salesmen before entering into the bicycle field), it will not perplex him. The Smith plant will be fully developed by Mr. Cassady. Already he has a tubular running gear for light horse drawn vehicles to market. Soon the factory will be making a running gear for automobiles. Carriage hubs—the shells and axles of which are of tubing, and the cups, cones, nuts, bolts and caps of which are stamped—will be conspicuous in the new forms of manufacture. In marketing these new products, as well as the well known line of Smith cycle stampings, the ability of Mr. Cassady will have full play.

SPOKE CUT-OFF, RE-TENONING AND FACING MACHINE NO. 257.

THE Bentel & Margedant Co., manufacturers of wood-working machinery of all kinds, Hamilton, O., have just brought out the new machine, illustrated herewith. Stock spokes are made with the tenon of full size or heavier than necessary, and before they can be driven into the hub they must be cut down to the proper length and thickness, and for this purpose this machine has been brought out. In order to save time and rehandling of the spoke the machine is furthermore equipped with a facing disc and clamp, so the entire spoke can be finished in one operation. The frame of the machine is heavy and substantial, of the column pattern, and rests solidly on the floor. The spoke is held securely in a clamp, which works back and forward on long dovetail slides. The cut-off saw is placed at the front of the machine. It is adjustable for any length of tenon or it can be entirely removed if so desired. The two tenoning heads have an independent adjustment up and down for various thicknesses of tenons. They are carried on steel mandrels running in long, heavy boxes. After passing the spoke through between the heads it is carried against the facing disc and one side is properly faced. It is then turned over and the other side is faced in a like manner, provisions being made through a sliding stop for facing the spoke to its proper thickness. The facing disc carries three knives set at such an angle so as to produce a shear cut across the face of the spoke. The machine is adapted for the lightest as well as the heaviest



SPOKE CUT-OFF RETONING AND REFACING MACHINE.

pokes. The countershaft is made to go overhead, and but one counter is used to run the various mandrels. It carries our patent tight and loose pulleys, the loose pulley being of smaller diameter than the tight. They are 10 in. in diameter by 5¼ in. face, and should make 750 revolutions per minute. The weight of the machine is about 1,600 pounds.

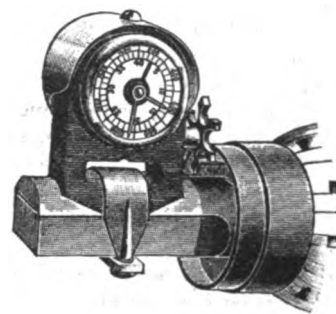
THE ANDERSON CARRIAGE CO.

THE Anderson Carriage Co., of Detroit, Mich., have recently completed extensive additions to their factory. The increased facilities provided will enable the company to turn out from 13,000 to 15,000

carriages annually. The factory is 600 feet long by 100 feet deep, full three stories high, and contains an area of 145,000 square feet. 600 feet of railroad trackage gives the Anderson Co. unexcelled facilities for the handling of raw material and the prompt shipment of the finished product, the latter going to all sections of this country and no inconsiderable amount being destined for foreign lands both near and remote. One of the important adjuncts of this great and growing business is the local retail repository located in the Biddle House block on Jefferson avenue. Here the choicest products of this great factory are constantly on exhibition, forming a veritable vehicle exposition. The present officers of the Anderson Carriage Co. are: W. C. Anderson, president; C. A. Newcomb, vice-president; W. P. McFarland, secretary; W. M. Locke, treasurer.

THE IMPROVED BELL ODOMETER.

THE Improved Bell Odometer, shown by the well known house of S. H. Davis & Co., is the handiest and is claimed to be the most re-



BELL ODOMETER.

liable distance recorder on the market, and is the only one on sale suitable for automobile work. It is fastened readily to the axle, and with every revolution of the wheel a small pin attached to it turns a cog which faithfully registers, while the dial marks up the distance traveled. Being simple and correct in construction, it is a valuable contrivance.

SOMETHING ABOUT TIRES.

WITHIN the last few years rubber tires have come into general use for all classes of pleasure vehicles, and by lessening the rattle and noise of the wheels on hard or rough pavement, have greatly added to the comfort of riding. In the case of the bicycle, where lightness, simplicity and staunchness led to the adoption of a light, rigid frame, the pneumatic tire solved the spring problem in a very perfect manner.

For bicycles it is probable that the pneumatic tire will never be superceded. For light horse drawn vehicles, such as speed wagons, etc., where the weight carried is small, and good roads are the rule, pneumatic tires have met with considerable success. For the heavier classes of work and in all cases where considerable weight must be supported and shocks absorbed on uneven ground, springs are necessary, having a greater amplitude of movement, and possessing greater strength than is possible to attain by means of pneumatic tires only. Steel being the strongest and most suitable material known for spring making, it is hardly conceivable why any attempt should be made to substitute a less suitable material. As the subject of vehicle springs has such an important bearing upon the tire question, and, as in the case of automobile work, it has been so imperfectly understood by builders, we feel that too much stress cannot be put upon the subject. While this is not written as a criticism of motor vehicle construction, we feel justified in pointing out that some builders have turned out vehicles having delicate machinery which for its preservation should be saved from shock, but which is so supported on rigid axles that unless some resilient tire is used, injury to its parts ensues. Pneumatic rubber tires have been placed on vehicles of such great weight that the strength of material used in such tires is not sufficient to withstand the resultant strains. Rapid destruction of tires follows, and large sums of money have been spent in trying to do what is impossible—to make such vehicles pay when the cost of maintaining tires is much greater than that for motive power. It has been repeatedly demonstrated that all parts of the motor vehicle needing protection from shocks due to uneven roads can be

supported upon steel springs entirely obviating the necessity of resilient tires. Easy riding qualities can best be secured by the usage of properly designed steel springs. To insure this end all springs should be sufficiently long to produce a slow movement on recovery from compression. When properly hung, any vehicle, whether horse drawn or motor driven, will ride easily on a perfectly hard tire. The only valid reason, therefore, for substituting any other material than steel is to insure a noiseless running vehicle, and to avoid dangerous slipping, which is particularly important in the case of motor driven vehicles.

The Stevens' tire has been developed after ripe experience in this kind of work, and best fulfills the requirement for an ideal vehicle tire. It is made from material which is much stronger and lighter than any purely rubber composition, and has greater durability. It is secured to the wheels in such a manner that it cannot creep or come off, but will remain on wheel without expense for repairs until worn out. Owing to its peculiar construction it will not slip on slimy pavements under ordinary conditions. This tire is made up principally of a special fabric, the threads of which are disposed in a diagonal direction, leaving the ends of the threads only at the surface. This fabric is closely laminated in the tire structure and incorporated with a special vulcanized compound, which produces a tire of wonderful strength and wearing qualities. These tires are secured to the wheels by side flanges and bolts, which pass through the body of the tires. Owing to the enormous strength possessed by the material in these tires, this makes the strongest and most secure fastening ever devised.

Water is one of the best lubricants for rubber, therefore all rubber tires will slip on wet pavement. Slipping becomes a serious and dangerous thing in the operation of motor driven vehicles. With the Stevens' tire this trouble is obviated, in so much as the surface picks up and retains gritty particles from the road, and always acts in the same manner as a sanded surface. With these tires it becomes perfectly safe to turn corners under conditions which would be exceedingly dangerous with other tires.

The brake shoe can be applied direct to these tires, and for this purpose shoes made of same material are furnished. There are no other tires, except steel, that will stand this service. The builders of automobiles should make a note of this, as it enables them to greatly simplify the brake mechanism, and in cases where they wish to retain existing forms of brakes they can improve their vehicles by adding, at small expense, a duplicate or emergency brake direct to tires.

MILLER BROTHERS.

MILLER BROTHERS, of Amesbury, Mass., builders of fine carriages in the white, have brought out an exceptionally fine catalogue showing a line of stylish vehicles as they will appear when finished. The styles are of the latest designs and include spiders, stanhopcs, ladies' phaetons, victorias, cabriolets, broughams, depot wagons, traps, vis-a-vis and breaks. The engravings are finely executed, and the printing such as to bring out the cuts to the best advantage. Send for a copy.

BUCKEYE BUGGY CO.

THE Buckeye Buggy Co., of Columbus, O., are sending out their 1901 catalogue of over 100 illustrated pages, showing an extended line of carriages covering every class from the brougham to the road wagon, some of which are standard styles, others built on new lines. Many of the patterns are artistic and attractive, pneumatic tires on wood and wire wheels. Plain and tubular gears are used on station wagons, driving wagons, stanhopcs, phaetons, etc. This catalogue is well printed and should be in the hands of all progressive dealers.

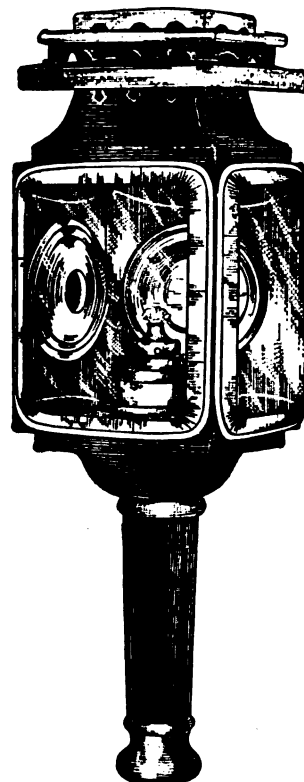
TIRES FOR FIRE ENGINES.

THE India Rubber Co., of Akron, Ohio, are always at the front with new things. They have perfected an endless solid tire for self-propelling fire engines. The great size of these tires can be estimated when it is known that they carry from eight to ten tons. One of the leading fire engine builders recently sent them a large order for these special tires.

A WOMAN'S idea of riches is not to own much, but to own more than any one else she knows.

THE ENDERS' LAMP WORKS.

ALTHOUGH the coach lamp works of George Enders, of Newark, N. J., is comparatively a young house, their facilities for manufacturing first class work are complete. The lamp shown herewith, their "Belmar," is of the best material and workmanship, beauty in de-



BELMAR.

sign and of artistic and superior construction. This house has been in business four years, and has met with gratifying success in the way of increased trade and complimentary appreciation of style. George Enders has worked at the coach lamp business for the last twelve years, and his experience in lamp making and the superior manufacturing facilities at his command are sure guarantees that he will firmly maintain his position in the front rank of the carriage lamp procession. The reader's attention is called to an advertisement of this house on another page.

PARRY SUPPLEMENT.

THE Parry Manufacturing Co., of Indianapolis, Ind., have issued a supplement to their 1901 catalogue illustrating a number of the latest styles of vehicles brought out by them for this season. These consist of surreys, buggies, and spring wagons. You can get the supplement as well as the complete catalogue by writing for them.

WHEN FINIS COMES.

When finis comes, the book we close,
And somewhat sadly fancy goes,
With backward step, from stage to stage
Of that accomplished pilgrimage—
The thorn lies thicker than the rose.

There is so much that no one knows—
So much unreachd that none suppose;
What flaws! what faults!—on every page,
When finis comes.

Still—they must pass! The swift tide flows,
Though not for all the laurel grows,
Perchance, in this be-slandered age,
The worker, mainly, wins his wage;
And time will sweep both friends and foes
When finis comes.

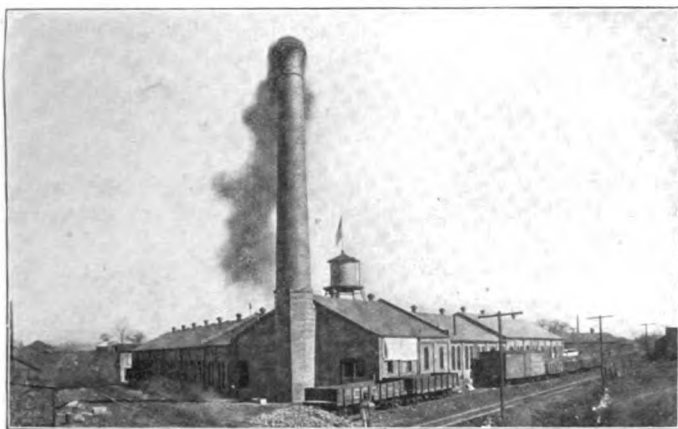
AUSTIN DOBSON.

PLANT OF THE BUCKEYE RUBBER CO.

THE accompanying cuts illustrate the new Buckeye Rubber Company's factory at Akron, Ohio, the factory where the tires of the Consolidated Rubber Tire Co. are manufactured—known to the trade as Kelly-Springfield tires. The first department is the washing room. This room is 40 x 40 feet, equipped with monstrous machines. The crude rubber is first broken here and washed; this is called the first process. The rubber is next taken to the dry room on the second floor, where it remains about three months and becomes exceedingly tough.

The next operation takes place in the mill room, 40 x 120 feet in size, and many heavy rolls are seen in operation here. It is in these rolls that the rubber is mixed with the compounds that add to its wearing qualities.

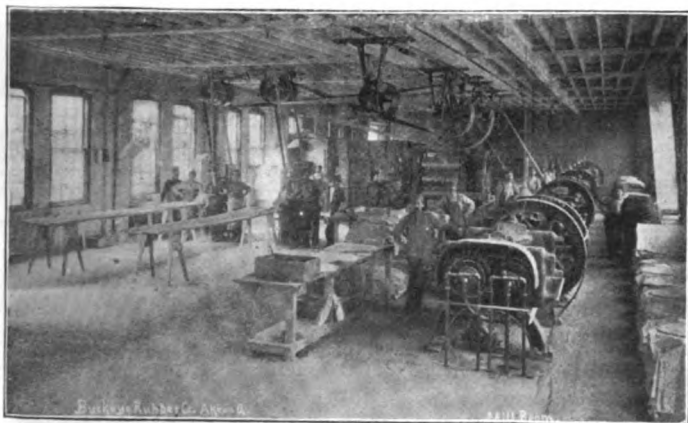
Then it is taken to the vulcanizing room. Here the rubber is forced through tubing machines. The machines very much resemble a sausage grinder. The rubber goes into the machines in large batches of about 100 pounds each and comes out in the tire form, with holes



EXTERIOR OF FACTORY.

for the retaining wires made. This room is 40 x 120 feet in size and on one side are located the vulcanizing ovens. The tires as they come from the tubing machines are put in heavy cast iron molds clamped together and then go into the ovens, where they are subjected to a high pressure of steam for about fifty minutes. The tires are then ready for use.

Another large department of the factory is its storeroom; dimension 40 x 120 feet. Here a stock of finished tires of all sizes is kept; about sixty-five tons. About 400 tons of channel steel in the different sizes and about twenty tons of retaining wires are also stored in this

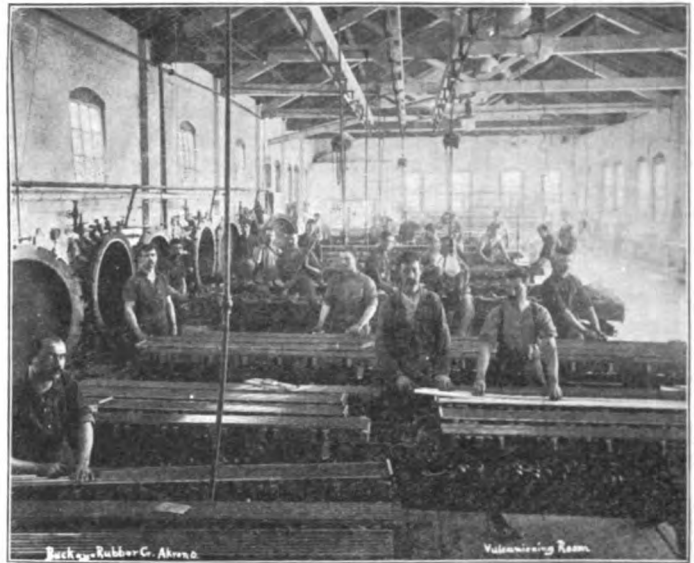


MILL ROOM.

room. The factory is equipped with a machine room where many of their machines are made and kept in repair.

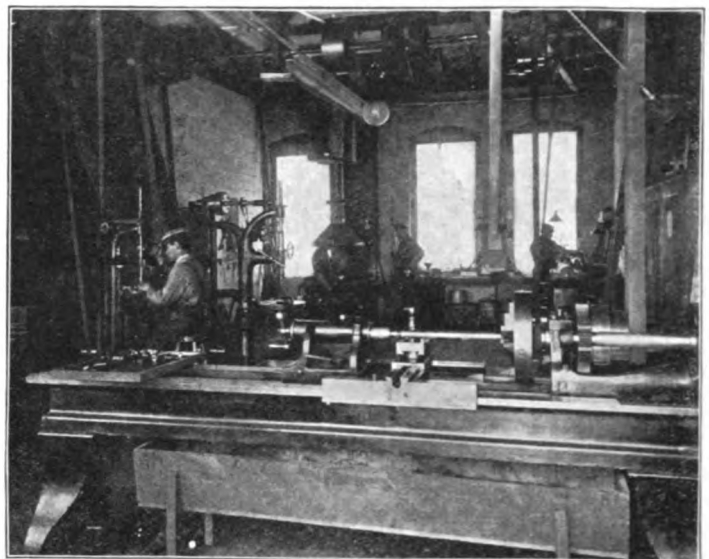
The engine room is a model of neatness. A 350 H. P. Corliss engine is used. They have their own dynamos and generate their own electricity for lighting, and transmit it to many motors in different parts of the factory for running the machines. The boiler room with three 125 H. P. boilers adjoins the engine room. Twelve tons of coal are used per day. A model factory in every way, very light in all depart-

ments. It was built for making solid rubber tires exclusively, and the arrangements for its purpose could not be improved upon. A hot



VULCANIZING ROOM.

air fan in the basement forces heated air through all parts of the buildings.



MACHINE ROOM.

INCREASED THEIR CAPITAL.

THE Standard Roller-Bearing Co. of Philadelphia, Pa., have increased their capital stock and continue the business on an enlarged scale, manufacturing anti-friction roller-bearings for use on all classes of machinery and shafting, and also manufacturing roller and ball thrust bearings for vertical shafts, steam propeller shafts, etc.; also roller bearing axles for wagons, carriages and automobiles. Their business was established three years ago with a capital of \$75,000. Later this was increased to \$100,000, and again increased to \$125,000, and now increased to \$1,000,000. The company are enlarging their works very materially, putting in the latest improved automatic machinery, in addition to the large stock of machinery, which they now have on hand. They have increased their capital and plant for the reason that their orders are far in excess of their present capacity, owing to the fact that they have, apparently, the only roller-bearing that gives satisfaction on all classes of light or heavy work, without the rollers twisting and without any appreciable wear.

PALM'S TRANSFER LETTERS.

THE Palm Letter Co., of Cincinnati, Ohio, have forwarded us a copy of their illustrated sample book and price list, containing a great number of designs of transfer letters, figures, scrolls and other devices—a valuable book for the carriage and wagon painter.

WILL USE WIRE WHEELS ONLY.

S. R. BAILEY & Co., Amesbury, Mass., manufacturers of the famous Bailey Pneumatic Whalebone Road Wagon, have abandoned their custom of making any of their wagons with high wheels. The superiority of the pneumatic wire wheel has been so completely demonstrated that they are almost universally demanded. S. R. Bailey & Co. have in the past accommodated a few of their customers by equipping their road wagons with high wheels when they were desired, but now find that every available bit of space in their immense establishment, and every moment of the time of their skilled workmen, are required for their regular output—the Bailey Pneumatic Whalebone Road Wagon. Never in the history of their business, which was established in 1856, have they had such a demand for their product. This is remarkable when one takes into consideration the fact that S. R. Bailey & Co. make but one style of vehicle, the Pneumatic Whalebone Road Wagon, every part being made exactly in duplicate. They say they hope from time to time by constantly studying and experimenting to find parts which they can improve, but at the present day, as far as they know, they are building absolute perfection.

LIBERTY AUTOBELL.

THIS musical chime bell has new and improved features that will surprise and please you. It is handsome in appearance and very easy to operate. The gongs being attached to a loose arbor serve the purpose of a balance wheel, and in rotating trip the strikers alternately



and produce very clear and distinct tones and any desired alarms. With slight pressure a continuous ring can be maintained. Manufactured by the Liberty Bell Co., Bristol, Conn.

ERECTING A NEW OFFICE BUILDING.

THE Goodyear Tire & Rubber Co., of Akron, Ohio, are erecting a very fine office building, 60 x 60, and two stories high. It will be completed about May 1. Their factory is being run to its utmost capacity. They work three crews of men eight hours each, the machinery never stops. An immense addition to the factory will be seen before the summer is over.

AN ELABORATE CATALOGUE.

THE Defiance Machine Works, manufacturers of patent wood-working machinery, Defiance, O., have forwarded us one of their illustrated catalogues, a large volume of about 400 pages, cloth bound and gold stamped, handsomely printed, and profusely illustrated. This catalogue is worthy a place in mechanical libraries, and a study of its pages will not only prove interesting, but instructive as well. The company have printed their catalogue in English, German and Spanish languages.

SOLD AN INTEREST IN THEIR BUSINESS.

TIMKEN CARRIAGE Co. and Haydock Bros. Carriage Co., consolidated Dec. 1, 1900, St. Louis, Mo., announce that they have sold an interest in their business to J. J. Cook and George L. Niehaus, St. Louis, Mo. Mr. Niehaus will take an active interest at once. This sale was made owing to the large increase in their business, necessitating more assistance and capital in operating it. The management will be the same as heretofore, with Mr. W. R. Timken as Vice President and General Manager, and Mr. John P. Camp as Secretary.

ILLUSTRATED BOOKLET.

THE Hartford Rubber Works Co., of Hartford, Conn., have issued a neat little booklet, brightly illuminated by fanciful and factful scenes in colors, around and among which is told in poetry and prose the merits of the Hartford tire. This mixing fact with fancy



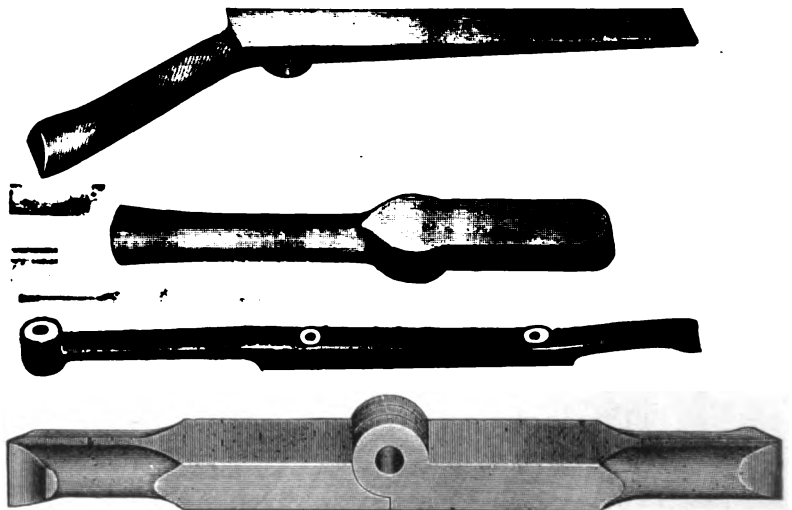
commands the attention of the reader, and impresses upon the mind the fact that the Hartford single tube is a valuable adjunct to the carriage, automobile and bicycle. The company is to be congratulated on their artistic as well as their mechanical success.

CARRIAGE AND AUTOMOBILE BODIES.

THE Miller Carriage Supply Company, of Bellefontaine, O., manufacturers of carriage and automobile bodies and carriage seats, have sent out their 1901 chart, containing illustrations of a line of bodies and seats, built by them, consisting of buggies, phaeton, surreys, etc. The line is an attractive one, and carriage builders wanting anything in this line should write the firm for one of their charts.

DROP FORGINGS.

THE Blakeslee Forging Co., of Plantsville, Conn., whose ad. appears on another page of this issue, enjoy an enviable reputation for

**SAMPLES OF FORGINGS.**

first class work. Having been in business since 1877, their large experience enables them to turn out first class work at reasonable prices. They employ none but skilled workmen and are constantly adding to their line of carriage and coach work, besides doing a large business in special drop forgings. They have added an engine to their plant, are putting in new machinery, and are in better shape than ever before to serve their patrons.

NEW I. D. SEAT.

THE New I. D. Seat Co., of Rohrerstown, Pa., have every reason for congratulating themselves on their success in putting this seat on the market, the sales of which have been large and are steadily increasing, all of which is due to the actual merit of this little device. Dealers can handle this seat to an advantage to themselves and their customers.

AN EXPERT VARNISH ADVERTISER.

It gives us pleasure to publish the portrait of Leonard P. Mendes, who is in charge of the advertising department of the Standard Varnish Works, of New York, Chicago and London. Although varnish manufacturers as a rule expect nothing from advertising but general publicity, Mr. Mendes has proven conclusively that when the work is carried on systematically and intelligently, direct and profitable results can be obtained. During the past five years an aggressive advertising campaign has been in operation in the office of the Standard Varnish Works, and to-day their carriage



LEONARD P. MENDES.

Advertising Manager of the Standard Varnish Co.

varnishes and also their general lines are thoroughly well known throughout the world, and a very great proportion of the dealers and large consumers are numbered among their regular customers. While satisfactory quality of goods and high class salesmen is the prime motto of this house, the advertising department has been a great help in making the first point generally known and appreciated, and has also been of remarkable assistance to the men on the road. We feel safe in asserting that Mr. Mendes is one of the most aggressive and successful varnish advertising managers of the day.

AMERICAN VEHICLES FOR FOREIGN TRADE.

STATISTICS show that the export of manufactured goods is increasing to an extent far beyond the expectations of the most sanguine. For various reasons the export of American vehicles has not kept pace with most other manufactures, but there is a steady and healthy increase, and we may reasonably expect that as their wearing qualities become better known the increase will be rapid. That the good grade of American carriages are unexcelled for durability, style, ease of draft, and comfort must be admitted by every fair man, and all that is required is to convince customers to that effect to greatly extend the trade. It is well to understand, however, that the standard must be kept up. One of the companies that is working on correct lines is the Buffalo Spring & Gear Co. of Buffalo, N. Y., and it is safe to say that they do the largest business in buggy sizes of any house in this country. See their advertisement on another page.

THEIR BOOKLET FOR 1901.

THE G. & J. Tire Co., of Indianapolis, Ind., have issued a little book in which they set off the merits of their tires in a way that will carry conviction as to their merits. They have secured an artistic and attractive cover. You can get one by writing for it.

EARL ROBERTS ON AMERICAN VEHICLES.

IN one of his official reports of the South African campaign, Earl Roberts, of England, has paid a high tribute to American wheelwrights and their products. Speaking of the wagons used in the transport service, he says, after mentioning the serviceable vehicles made in Cape Colony and the frequent re-tiring and repairing which English built wagons required:

"Six wagons were imported for trial from the United States. These proved to be superior to any others of either Cape or English manufacture. The wheels were of hickory, the bodies of black walnut and the metal work of steel. It may be added that the wagons in question cost considerably less than the English wagons."

Commenting on the British general's opinion, Daniel T. Wilson, of Flandrau & Co., said:

"There can be no doubt that American wagons and carriages are the best in the world, and the world is rapidly finding it out. Their superiority is due to several causes. In the first place, our American hickory is the best wood in the world for making rims and spokes. It is the only available wood which can be bent so as to make the rim of a wheel in two pieces. English and French builders have been making their rims of oak, in four pieces, sawed to the proper shape across the grain of the wood, but both countries are now importing our hickory rims.

"Another point of superiority in American vehicles for export is the fact that they can stand any climate. English carriages, being built in a damp climate, shrink, crack and go to pieces when exposed to dry atmosphere. This was plainly one of the causes of their failure in South Africa. The rims of felloes were shrunk from the tires, and probably the spokes were loosened.

"Our carriages, built in a dry atmosphere, can be safely taken to any part of the world. In a damp climate like that of England they are better than the home made product, because the wheels never shrink there, and in a dry climate like Africa they are as good as the best.

"Another thing, we can undersell any country in the world, because our carriage building machinery is incomparably superior to that of European or English makers. French builders now recognize this fact, and they are not only importing our wood, but they are taking along our machinery to work it."—*New York Herald*.

T. P. HOWELL & CO.

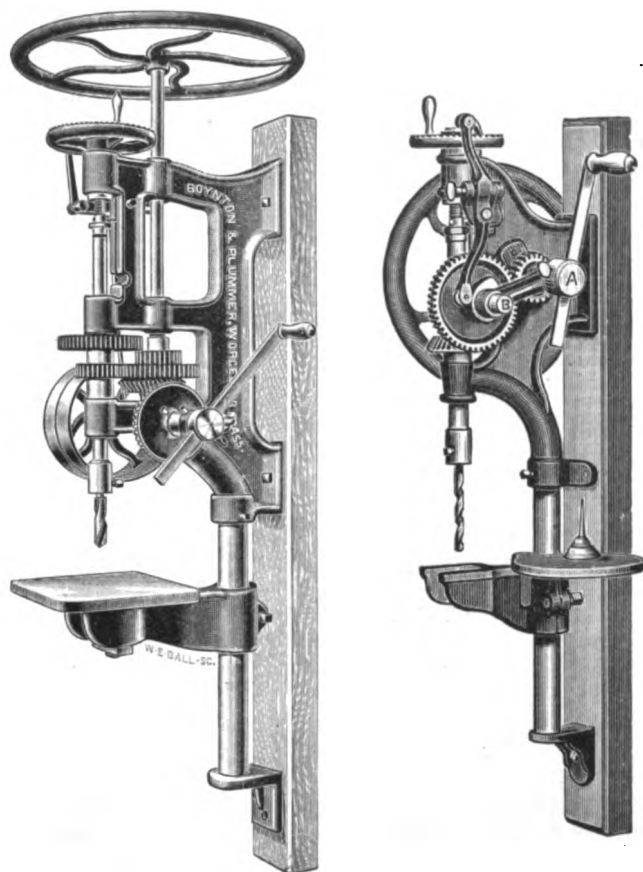
T. P. HOWELL & Co., the second oldest patent and enameled leather manufacturing concern in Newark, have to-day the largest plant of its kind in the United States, and one of the most extensive leather industries in the entire world. As the giant oak compares to the little acorn from which it sprung, so does the Howell plant of to-day compare with the small beginning made by its eminent founder, Mr. Theodore P. Howell, in the year 1840. That start was made with two employees and a boy, forty hides per week being the total output. To-day upward of three hundred and fifty men are employed and the company handles upward of thirty-five thousand hides in a year. Then the plant comprised two small rooms, while to-day its twenty-six buildings in New, Wilsey and Nutman streets, Newark, many of which are three, four and five stores high, cover between three and four acres of ground, and the yards some two acres more, with a frontage of 1,200 feet on the Morris Canal. The little tannery of 1840 was a frame structure, but the buildings to-day are all constructed of brick and iron. Electricity is the motive power and it is generated by the company's own magnificent plant erected in 1896. In 1840 it was a pioneer in a new industry—to-day it is an up-to-date leather plant in every sense of the term, only the highest grade of steer hides being used, and the product is the very highest grade of oak tanned. The company's trade extends throughout the civilized globe and branch offices are maintained in leading cities.

GET A COPY.

THE Sprague Umbrella Co., of Norwalk, Ohio, have issued a handsomely illustrated catalogue of their umbrellas in a variety of positions and on numerous kinds of vehicles, together with illustrations of Sprague's adjustable gravity wagon top, a perfect top for heavy express and other wagons of like character. Send for a copy and learn what constitutes the features of the Sprague tops.

UPRIGHT DRILLS.

BOYNTON & PLUMMER, James Kindred, proprietor, Worcester, Mass., manufacturers of drills in great variety, which are carefully constructed of the best of material and superior workmanship. Thirty odd years' experience in manufacturing these tools enables them to put upon the market the standard of their class. They continuously add such improvements as seem desirable to keep up the high standard, convenience and durability. The machines are arranged for hand, power or both. We illustrate herewith two of their upright drills. No. 3 Upright Self-Feeding Drill: This machine has cut gears so arranged that a quick or slow motion may be given the drill, as desired, for light and heavy work, making a desirable tool for machine shops or factories, answering as well as a



UPRIGHT DRILLS.

NO. 3.

NO. 1 1/2.

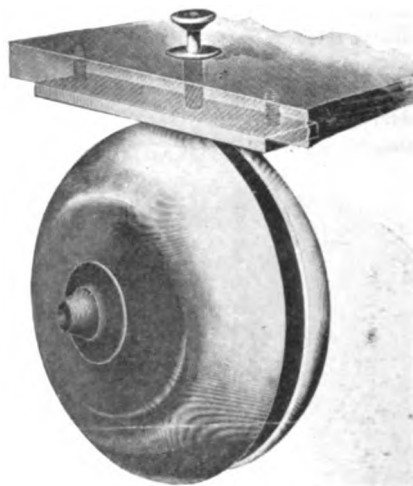
higher cost machine. Has their patent stop on feed, which prevents the breaking of feed connection. Spindle is made to take 41-64 in. straight shank drills, and can be made to take 1/2 in. or taper shank; drills 0 to 1 1/2 in. hole, and to the center of 21 in. circle. No. 1 1/2 Upright Self-Feeding Drill: This machine, as also all others of their self-feeding drills, has nearly a continuous feed, which may be quickly adjusted by a thumb screw to three rates of speed. A fast or slow motion may be given the drill by changing the handle from shaft, A, to shaft, B, as desired by the operator. By this arrangement the capacity of the drill is increased nearly one-third. Drills from 0 to 1 1/4 in. hole, and to the center of 11 in. circle; spindle takes 1/2 in. straight shank drills, and like all the rest of their drills, can be made to take 41-64 in. or taper shank. Send for a catalogue.

LOOKING AFTER THE "WEMAKA" TIRE.

FRANK W. STANLEY, formerly connected with Flandrau & Co., New York, the well known carriage builders, has accepted a position with the New Jersey Car Spring & Rubber Co., Jersey City, and will look after the interests of the "Wemaka" tire and the New Jersey rubber, carriage, mats and mattings, in the Middle and New England States. Mr. Stanley is very conversant with the requirements of the carriage trade, and with his wide acquaintance will undoubtedly swell the sales of the "Wemaka" tire rapidly.

EAST HAMPTON BELL CO.

THE East Hampton Bell Co. of East Hampton, Conn., manufacture a bell designed specially for automobiles. In their construction dura-



AUTOMOBILE BELL.

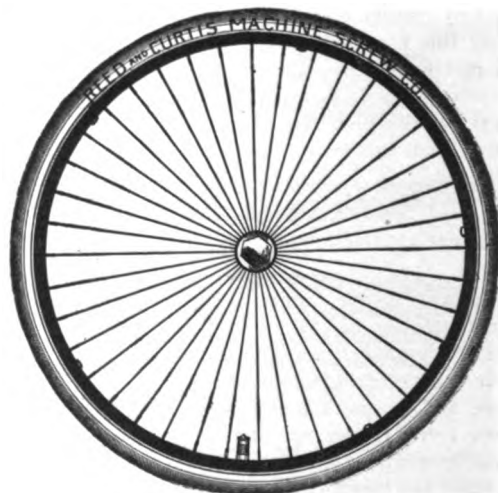
bility has been made a special mechanical feature. Their tones are pure and clear and musical. Send for sample and prices.

H. A. HORTON.

Do you want carriage bodies of any kind? If so drop a line to **H. A. Horton**, New Haven, Conn. Give him an idea as to what you want and he will work it up to your satisfaction. He is a carriage draftsman and a body maker as well as a close observer of the drift of the times and will assist you in placing your work well in the front. Give him a trial and you will find him all right in every particular.

THE WORCESTER WHEEL.

THESE wheels are manufactured by the **Reed & Curtis Machine Screw Co.**, Worcester, Mass. The accompanying illustration presents their carriage wheel with the No. 2 hub. The hub is made of sheet steel and is first class in every respect. It takes fourteen 5-16 inch balls in the cup. These hubs can be furnished assembled for



THE WORCESTER WHEEL.

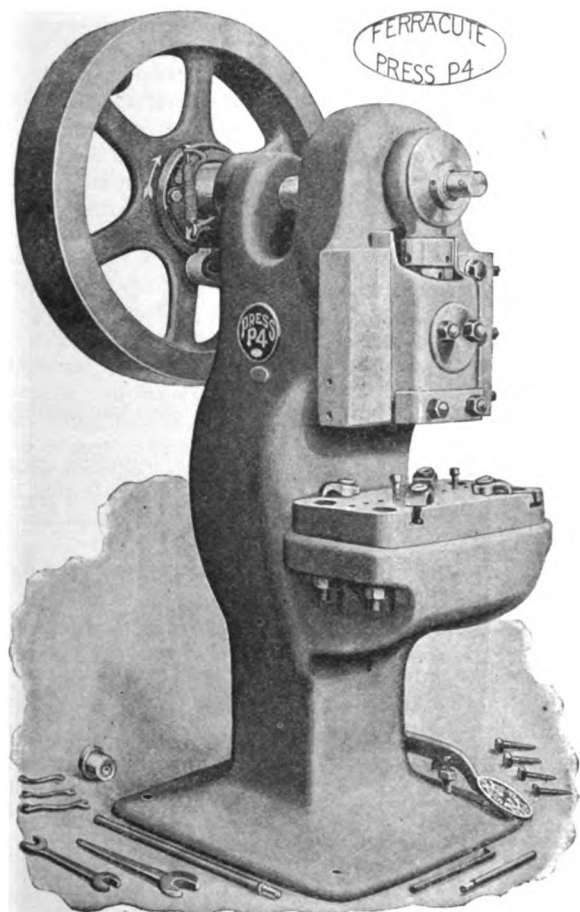
34 and 36-inch wheels, or any other size, with rims for 2-inch pneumatic tires. The wheels can be furnished, nickel plated or plain ready to paint. The company publish a little circular catalogue marked "Catalogue D," which it would be well for manufacturers to send for.

AN ELABORATE HANGER.

THE Goodyear Tire & Rubber Co., of Akron, O., have issued an illuminated hanger showing a female bust with shoulders slightly draped with black lace and head covered with a huge hat, the whole suggestive of the stage.

NEW PUNCHING PRESS.

THE illustration herewith represents a machine recently brought out by the Ferracute Machine Co. of Bridgeton, N. J. By their new system of classification it comes under class P (punching presses), being of the fourth size it is known as press P4, and it weighs 4,800 pounds. In the same series are five other sizes, the smallest, P1, weighing about 1,400 pounds, while P2, P3, P5 and P6 weigh 2,200, 3,200, 7,200 and 11,000 respectively, the design being the same in all. These presses when built with back gearing are known respectively as PG1, PG2, PG3, etc., the "G" in the symbol following the class letter signifying "geared." The frame of this press is hollow and of very rigid proportions, having the tensile and compressive members of those parts which act as a beam arranged with internal ribs. The



PUNCHING PRESS.

pitman is of recently improved construction, its stem, while having the advantage of a screw adjustment, being firmly gripped both at its upper and lower ends, in the pitman pivot and strap respectively. The ram is unusually heavy and is arranged with very long and wide bearings; an extra long pitman adjustment, graduated to hundredths of an inch. The shaft is of forged steel with unusually large and long journals. In an enlargement of its solid metal is mounted an automatic stop-clutch of the utmost simplicity. This clutch is provided with a safety lock which, while performing other functions incidentally, can be so manipulated as to prevent the press from starting while dies are being set, etc. A new and valuable feature consists in a so-called clutch plate, carrying and tripping device, which is adjustable around the shaft's axis, thus allowing the clutch to be tripped either earlier or later than the normal to accommodate itself to varying degrees of momentum in the shaft and parts attached thereto. In general this machine is characterized by carefully proportioned parts, great weight and inertia to those submitted to heavy stresses, harmonious curves, heavily rounded corners, absence of external ribs, case-hardened bolts and nuts of large diameter, etc. The dimensions of this press are as follows: Hole through bed, 10x12 in.; throat, from ram centre back, 8½ in.; height bed to ram at top of stroke and adjustment, 10 in.; standard ram stroke, 1½ in.; special ditto to order anything up to 4 in. adjustment of ram, 3 in.; fly-wheel, 40x7 in.; weight of fly-wheel, 1,100 pounds; speed of fly-wheel, 90 revs. per minute; thickness iron punchable with 1 in. round dies, ⅝ in.; thickness of bolster, 3 in.; pressure safely exerted by ram, 52 tons.

A CHANGE IN BUSINESS.

THE Dovetail Co., of Crawfordsville, Ind., have discontinued the manufacture of finished work and have leased their woodworking department to Messrs. Coutant & Johnson, who will continue the manufacture of buggy bodies. Mr. Coutant was the former superintendent of the Dovetail Co., and Mr. Johnson held the same position with the Casket Co., of Crawfordsville.

THE HESS SPRING & AXLE CO.

RECOGNIZING that their spring making, like all other manufacturing industries, must keep pace with the times, the Hess Spring & Axle Co. of Carthage, O., are preparing to be among the foremost in improvements and will soon be ready to prove that they can revolutionize the business, and they ask you to write them for "a tip."

A GREAT CATALOGUE.

THE largest catalogue that has reached our office this season is that of Mansur & Tebbetts Carriage Mfg. Co., St. Louis, Mo., builders of "White Elephant" vehicle. It is a quarto volume of 132 pages. It is profusely illustrated, showing almost every kind of popular carriage, from surrey to buggy, also spring wagons, road and speeding carts, together with harness suitable for that line of vehicles. It has an embossed cover, with the white elephant in the foreground.

THE EMERY TIRE.

THE Emery Tire Co., of Providence, R. I., manufacture an air cushion tire which they claim possesses all the resilient qualities of the pneumatic tire and the stability of the solid tire. Puncturing of the casing cannot affect it, and the danger of a breakdown on the road is overcome. See advertisement in this month's HUB, and write for particulars.

BELLS.

BEVIN BROS. MFG. Co., of East Hampton, Conn., manufacture bells of all sizes for carriages, wagons, automobiles, etc. Their bells pos-



AUTOMOBILE BELL.

sess some special features which commend them. See their advertisement in this month's HUB, and write for further particulars.

AUTOMOBILE SLEIGH IN GERMANY.

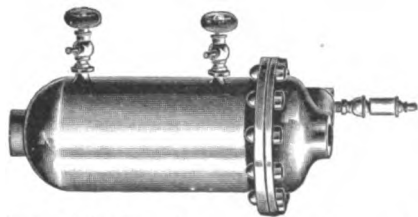
*CONSUL GENERAL GUENTHER of Frankfort, February 23, 1901, reports the appearance at Nueremberg of the first automobile sleigh. The vehicle glides along with great speed and a perfectly easy motion. It was constructed by the Nueremberg motor vehicle factory union.

PRINCETON AUTOMOBILE CLUB.

AN automobile club has been organized by the university students. Penryn S. Adams, '01, was elected president and Charles H. Dugro, '03, secretary. Other members of the club are Richard Elkins, Witherbee Black, Bertram Ripley, '01; J. H. Reed, Jr., Davis Adler, '04. The club will take runs during the spring and autumn with automobile clubs of other universities.

"THE RELIANCE."

OPERATORS of steam vehicles find that low water in the boiler is both dangerous and expensive, and will welcome the Reliance Low Water Alarm as a sure safeguard against accident from low water. It is positive in its action, and if the water gets low, gives the alarm instantly by means of the whistle. It is tested to over 400 lbs. pressure, in order to safely stand the high steam pressure carried in



locomobile boilers. It is the only successful alarm we know of for the purpose manufactured. The operator of a boiler on a steam carriage, of necessity, has to be very near to the boiler, and with the high pressure carried, a case of low water may result in a disastrous accident, which may be avoided by using the Reliance Low Water Alarm. It is manufactured by the Reliance Gauge Column Co., of Cleveland, O. Ralph Temple Co., of Chicago, handle "The Reliance."

THE LIVERPOOL SELF-PROPELLED TRAFFIC ASSOCIATION.

TRIALS OF MOTOR VEHICLES FOR HEAVY TRAFFIC, JUNE, 1901.

PARTICULARS OF COMPETITION.

OBJECT OF TRIALS.

The object of the trials is to provide a means of making a preliminary test of types of heavy motor wagons suitable for haulage operations in Lancashire, prior to their being taken over by a Lancashire syndicate which will be formed for the purpose of conducting road transport between Liverpool and manufacturing towns in Lancashire.

PROGRAMME OF TRIALS.

Monday, June 3, hill-climbing at Everton Brow. Manœuvring at Prince's Dock.

Tuesday, June 4, Liverpool to Manchester, *via* Warrington.

Wednesday, June 5, Manchester to Liverpool, *via* Bolton.

Thursday, June 6, Liverpool to Blackburn, *via* Chorley.

Friday, June 7, Blackburn to Liverpool, *via* Preston.

The association will arrange with Lancashire manufacturers and Liverpool shipowners for the provision of loads of general merchandise, which will be collected, transported and delivered free of any charge, as a demonstration that the motor wagon is a practical and commercial success.

It is proposed to form a local committee at each important town on the lines of route.

The following gentlemen have accepted their nomination as judges: Mr. Everard R. Calthrop, M. Inst. Mech. E.; Mr. S. B. Cottrell, M. Inst. C. E., M. Inst. Mech. E.; Professor H. S. Hele-Shaw, F. R. S., L. L. D., M. Inst. C. E., M. Inst. Mech.; Professor Boverton Redwood, F. R. S. E., F. I. C., F. C. S.; Sir David Salomons, Bart., M. A., Assoc. M. Inst. C. E.; Mr. Henry H. West, M. Inst. C. E., M. Inst. N. A., M. Inst. Mech. E.

Diplomas will be awarded, at the discretion of the judges, in each of the three classes, and such vehicles as obtain satisfactory records will be recommended by the judges for adoption by the Road Carrying Syndicate.

A report on the trials will be issued by the judges and circulated by the association.

General regulations applicable to all vehicles:

I. The vehicle shall be self-propelled and self-contained. It shall be propelled by mechanical power alone, but there shall be no restriction on the source of such power or the nature of the agents used.

II. The vehicle shall be capable of going anywhere that a horse-drawn vehicle carrying the same load is ordinarily required to go, and, of being placed in the same position and withdrawn therefrom without external assistance.

The particular manœuvre most generally called for is to work into and out of a loading berth when cramped for room. This requirement arises in the case of embayments, or of confined spaces between other vehicles in a line receiving or discharging goods. Carters usually back into such positions obliquely, and bring the vehicle into line by turning the leading wheels at right angles to the rear wheels and again backing, but it is open to competitors to perform the manœuvre as they think best.

III. The vehicle shall be capable of working into and out of an embayment of one and a half times its own length.

IV. The vehicle shall be capable of starting from rest on and mounting a gradient of 1 in 9 (sets).

V. The capacity of any water tanks, whether the same be fitted for feed, cooling or other purposes, shall suffice for a run of fifteen miles on the basis of the consumption during the trial runs.

VI. Such portion of the platform of the vehicle as is designed to carry the load shall be level, and the height of the floor-line, measured either when light or when laden, shall be not less than 3 feet 6 inches, and shall not exceed 4 feet 3 inches.

VII. The vehicle shall conform in all respects to the requirements of the Locomotives on Highways Act, 1896, and, in the case of its being oil-propelled, of the "regulations as to petroleum" issued by the Home Secretary under Section 5 of this act. In Class C, intended for vehicles for export to the colonies and abroad, there is no tare limit, but the other regulations must be adhered to.

VIII. All working parts shall be properly encased.

IX. The boiler, tanks, oil-baths and connecting-pipes shall be fitted with drain-plugs at their lowest points.

X. The cross-section of any pipe connecting two tanks shall be not less than that of the pipe provided for filling the first tank of the two.

XI. Provision shall be made to lock the compensating gear.

VEHICLES ELIGIBLE FOR COMPETITION.

A	....1½ tons.	2 tons.	45 sq. ft.	3 in.	8 m. per hr.
B	....5 "	3 "	75 "	5 "	5 " "
C	....5 " (minimum)	No limit.	95 "	6 "	5 " "
D	....4 "	"	No limit.	"	"

We omit the rules and conditions.

The following are the points which will be taken into consideration by the judges in making the awards:

(a) Cost.—Prime cost; economy of working, including attendants.

(b) Control.—Stopping, starting, changing speed, steering and reversing, particularly under adverse conditions such as on inclines, in confined spaces, or on greasy surfaces.

(c) Working.—Adhesion on greasy surfaces when light and when laden; noise, smell, visible vapor, dust or other nuisance when traveling; number of mechanical operations requiring attention from the driver; efficiency of brakes; time occupied in preparing the vehicle for service on the road; speed—within legal limits; ability to travel between the depots without taking or receiving supplies of fuel, oil, gas, electrical or chemical materials or electrical current, water, or of any agent employed for actuating the motor or assisting its working; ability to travel between the depots without stopping to effect repairs, adjust parts, apply lubricants, or for any other purpose or cause not provided for in the itinerary; freedom from a breakdown of any nature.

(d) Construction.—Ratio of tare to weight of freight carried during the trials; percentage of total weight on driving wheels, when light and when laden; ratio of available platform area to extreme moving area in any horizontal plane; efficiency of wheels; nature and efficiency of gearing; strength of frame and working parts; quality of workmanship; efficiency of springs; freedom from complicated or over refined parts; facility with which repairs can be effected; capacity of bunkers or oil tanks.

(e) Steam-propelled Vehicles.—Provision to secure invisible exhaust; ample supply of steam; action of feed-pumps or injector, and ease of control of water-level; consumption of fuel and water per mile; leakage of steam or water; arrangements for stoking.

(f) Oil-propelled Vehicles.—Nature of variable speed arrangement, and smoothness with which changes of gear are effected; carburettion; ignition; circulation of cooling water and quantity required; consumption of oil per mile; leakage of pipes or tanks.

(g) Electrically-propelled Vehicles.—Battery power to travel forty miles on one charge; nature of the arrangements for varying discharge rate; method of carrying the battery and replacing same; simplicity of controller; B. T. U. per mile.

The decision of the judges, expressed in writing on any point, shall be final and binding on all parties, and they may withhold any reward or any portion thereof.

Three printed copies of these rules will be issued with each form of entry, one of which, signed by the competitor, must accompany each entry when forwarded to the honorary secretary. In signing and returning this copy of the rules, the competitor shall accept all the conditions herein imposed upon him, and shall agree to be bound in all respects by them.

E. SHRAPNELL SMITH, Honorary Secretary.

WOOD-WORKING MACHINERY.

THE following from the *British South African Export Gazette* is highly complimentary to an American manufacturing house:

"Wagon and cart making is one of the most important of the few industries of which South Africa can boast, and in the Cape Colony it has long held its own against the heavier vehicles which oversea manufacturers have frequently endeavored to introduce. The cause for this is explainable by the fact that the patterns most in vogue are rigidly adhered to as being suited to local circumstances and requirements, and as the wood used is mostly of native timber, which is found to withstand the heavy wear and tear required of it better than imported woods, and is invariably better seasoned in the dry climate that prevails, it is not surprising that the industry continues to grow and flourish at what may be said to be an abnormal rate as compared with others. As indicating its importance, it may be new to some of our manufacturers to learn that there are upwards of 700 firms in South Africa exclusively engaged in wagon and cart building. The destruction of wagons and vehicles of all descriptions during the prolonged war has been prodigious, and local firms have been taxed to the uttermost to keep pace with the demands made upon them. Owing, however, to the heavy importations of labor-saving machinery into the Cape and Natal in recent years, it is now possible to turn out wagons and carts complete in a surprisingly short time, and at a price which enables the makers who have been shrewd enough to lay down these appliances to laugh at competition from abroad. We have before called attention to the remarkable wood-working and labor-saving machinery which the Defiance machine works, Defiance, Ohio, U. S. A., have made a specialty for more than half a century, and for which they have an enviable but well merited reputation throughout the world. Indeed, they are the leading manufacturers in this particular branch of industry, and the variety of machines of improved designs which are being constantly added to their already long list is almost bewildering, as it certainly is a trib-

in. to 72 in. circles. From these brief descriptions it will be seen how thoroughly the appliances of the Defiance Machine Works Company cater for the needs of the Cape wagon and cart industry, and those interested are strongly urged to file the heavy catalogues which the firm will forward post free on application."

COL. SPRAGUE A VICE-PRESIDENT.

COL. SPRAGUE, of the Sprague Umbrella Co., Norfolk, O., has been selected by Governor Nash to represent the State of Ohio at the Pan-American Exposition. The Governor did well in selecting Col. Sprague, and Ohio can be congratulated in having so competent a representative at the Exposition.

Obituary.

FREDERICK L BUCKINGHAM.

FREDERICK L. BUCKINGHAM, for many years representing the English & Mersick Co., of New Haven, Conn., died in Buffalo, N. Y., on April 5th.

JOHN T. RIGBY.

JOHN T. RIGBY, of the firm of J. T. Rigby & Son, wagon manufacturers, of Anamosa, Ia., died at his home on March 16th. Mr. Rigby was formerly from Newark, N. J.

PETER TOLDT.

PETER TOLDT, wagon manufacturer, of Newark, N. J., died at his home on March 19th, in the fifty-eighth year of his age. At the time of his death he was one of the largest wagon manufacturers in the city of Newark.

EXPIRED PATENTS.

THE following list of patents, trade-marks and designs of interest to our patrons are furnished by Davis & Davis, solicitors of American and foreign patents, Washington, D. C., and St. Paul Building, New York City. A copy of any of these may be had for 10 cents by sending to the above firm.

PATENTS EXPIRED FEBRUARY 19, 1901.

- 293,619—Wheel—R. T. Bishop, St. Louis, Mo., assignor of one-half to T. Hunt, same place.
- 293,630—Tire for Vehicle Wheels—C. J. Clark, Mount Crawford, Va.
- 293,663—Corner-iron for Carriage Seats—H. A. Moyer, Syracuse, N. Y.
- 293,664—Pleasure Cart—H. A. Moyer, Syracuse, N. Y.
- 293,720—Two-Wheeled Vehicle—F. Doherty and E. L. Sies, Crawfordsville, Ind.
- 293,751—Wagon Tongue Support—N. Johnson, Harrisburg, Ill.
- 293,801—Vehicle Spring—E. S. Smith, Ovid, Mich.
- 293,824—Vehicle Spring—W. VanAnden, New York City.
- 293,880—Machine for Boring Tenons—W. Hosler, Petoskey, Mich.
- 293,907—Vehicle Running Gear—J. I. Nissen and C. F. Nissen, Salem, N. C.
- 293,934—Machine for Milling of the Hub Ends of Wheel Spokes—J. Barnet, Lafayette, Ind.

PATENTS EXPIRED FEBRUARY 26, 1901.

- 294,000—Thimble Skein for Wagons—A. J. Beach, Linden, Mich.
- 294,009—Two-Wheeled Vehicle—L. F. Castor, Philadelphia, Pa.
- 294,025—Vehicle Wheel—F. L. P. Fish, East Saginaw, Mich.
- 294,056—Carriage Wheel—E. P. Lynch, Davenport, Iowa.
- 294,222—Carriage Axle—J. Gowland, Philipsburg, Pa.
- 294,242—Vehicle Spring—S. D. Lance, Columbus, Ohio.
- 294,258—Spindle for Vehicles—C. E. Murray, Brandt, Ohio.

PATENTS EXPIRED MARCH 4, 1901.

- 294,374—Vehicle Spring—W. H. Doyle, Bantam Falls, Conn.
- 294,447—Neck Yoke—M. Dakin, Leslie, Mich.
- 294,461—Tire for Wagon Wheels—P. Gendron, Toledo, Ohio, assignor to the Gendron Iron Wheel Co., same place.
- 294,528—Two Wheeled Vehicle—S. Toomy, Canal Dover, Ohio.
- 294,617—Two Wheeled Vehicle—W. F. Heath, Fort Wayne, Ind.
- 294,628—Felly Boring and Spoke Tenoning Machine—E. M. Jenkins, Browning, Mo.
- 294,679—Two Wheeled Vehicle—C. W. Saladee, Torrington, Conn.

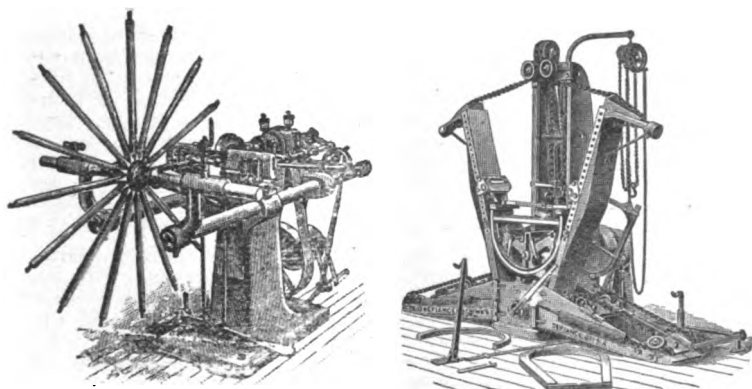


FIG. 1.—WHEEL TENONING AND CUT-OFF MACHINE.

FIG. 2.—AUTOMATIC RIM AND FELLOE BENDING MACHINE.

ute to the activity of the inventors. All branches of the wood-working industry are catered for by this eminent firm, and comprise machinery for making hubs, spokes, wheels, shafts, poles, hoops, brush and plough handles, etc., as well as for planing mills and furniture factories. Two of the most improved designs of such appliances which have special interest for Colonial wagon builders are illustrated. Fig. 1 is a patent wheel tenoning and cut-off machine for cutting off the tread end of spokes to equal lengths after they are driven into the hub, forming diameter of wheel and cutting tenons thereon of various sizes and lengths, and finishing the end of spokes complete, ready to receive the felloe.

"The many conveniences and advantages to be gained by the use of this machine are undeniable, and the fact that it is used by the leading wheel and wagon builders throughout America, performing the work at a great saving, and more perfectly than by any other method, should lead to its wide adoption in South Africa. Fig. 2 sufficiently explains itself without lengthened description. It represents a 12 in. automatic wood-bending machine, which has been designed to meet all the requirements for the successful and economical bending of felloes for carriage and wagon wheels, wagon hounds, reaches and other similar classes of bent wood stock. It is capable of bending the lightest felloes used for carriage wheels, up to the heaviest work required for farm wagon, truck, and even artillery wheels, bending hard wood as large as 5 in. in thickness, 12 in. in width, with adjustments sufficient to accommodate changes from 24

PATENTS EXPIRED MARCH 11, 1901.

- 294,788—Shifting-rail for Vehicles—J. Knapp, Cincinnati, Ohio.
 294,852—Vehicle-body—H. P. Colby, assignor of one-half to F. L. Elms, same place.
 294,891—Buckboard Wagon—W. Lockwood, Madrid, N. Y.
 294,912—Carriage-Top—T. J. Reed, Leavenworth, Kan.
 294,926—Two-Wheeled Vehicle—N. Starkey and G. Crowther, Amesbury, Mass.
 295,011—Road Wagon—M. G. Hubbard, Norristown, Pa.
 295,072—Automatic End Gate—T. S. Stewart, Saltsburg, Pa.

PATENTS EXPIRED MARCH 18, 1901.

- 295,143—Buggy Seat—W. W. Ball, assignor of one-half to A. W. Ball, same place.
 295,154—Two Wheeled Vehicle—W. S. Dilatush and J. R. Drake, Lebanon, Ohio.
 295,170—Tenon Extractor—O. Hendrik, Macon, Miss.
 295,174—Draft Equalizer—W. B. Hubbard, Greenville, Ill.
 295,176—Vehicle Spring—R. S. Hunzeaker, Pittsburg, Pa., assignor to himself and W. Herron, same place.
 295,177—Vehicle Spring—R. S. Hunzeaker, Pittsburg, Pa.
 295,190—Wagon Brake Lever—E. J. Miles, Kellogg, Iowa, assignor of one-half to H. M. Cox, same place.
 295,225—Bolster Plate for Wagons. L. J. Brandow, Starkville, N. Y.
 295,228—Vehicle Spring—J. P. Callen, Aurora, Ill.
 295,237—Wagon Tongue Support—J. T. Doguine, Chicago, Ill.
 295,277—Side Spring for Vehicles—H. W. Pell, Rome, N. Y.
 295,318—Shackle for Carriage Springs—H. Westphal and E. Dieterla, Chicago, Ill.
 295,331—Wagon for Moving Heavy Objects—A. Bartholomew, Springfield, Mass.
 295,404—Wagon Axle—T. N. Jenkins, Moline, Ill., assignor to himself and W. Ulhemann, same place.
 295,361—Two Wheeled Vehicle—J. S. Creighton and J. Taylor, Smith's Flat, Cal.

PATENTS EXPIRED MARCH 25, 1901.

- 295,601—Whiffletree Coupling—A. Vanorman, Racine, Wis., assignor of one-half to W. Johnson, same place.
 295,635—Spring Board Wagon—J. C. Harriss, Littleton, N. J.
 295,659—Musical Wagon—J. D. Miner, Dunkirk, N. Y.
 295,740—Vehicle Brake—J. Dillehay, Beach Grove, Ky.
 295,750—End Gate for Wagons—J. Gier and F. Finckle, Sigel, Ill.
 295,754—Vehicle Seat—G. Haskell, Salem, Mass.
 295,811—Whiffletree—H. Rorebeck, Parma, N. Y.
 295,879—Dumping Wagon—W. Leonhardt and J. Leonhardt, Baltimore Co., Md.

NEW PATENTS RELATING TO OUR TRADE.

- 651,419—Thill Coupling—William W. Garner, New Sharon, Ia.
 651,661—Vehicle—Thomas H. Hart, Everett, Mass.
 651,605—Hospital Buggy—Louis E. Hoffman, Cleveland, O.
 651,573—Power-propelled Vehicle—Frederick W. Lanchester, Birmingham, England.
 651,370—Thill Coupling—John H. Little, Amesbury, Mass.
 651,373—Jarless Hub—Louis C. Lorin, St. Paul, Minn.
 651,443—Combined Wagon Box and Rack—Joseph H. Manges, Wooster, O.
 651,772—Axle-bearing—Archibald J. Robertson, Chicago, Ill.
 651,403—Fifth Wheel—Le Roy S. White, assignor to Union Forging Co., Union, N. Y.
 32,822—Design, Steering Axle for Motor Vehicles—William Morgan, Pittsburg, and J. G. Heaslet, Allegheny, assignors to Autocar Co., Pittsburg, Pa.
 651,823—Vehicle Hub and Spindle—John P. Byrne, Blythe, Ga.
 652,000—Dust-hood for Buggy Tops—Charles C. Daugherty and H. F. Knoderer, Columbus, O.
 652,236—Spring Wheel for Vehicles—George B. Fletcher, London, England.
 652,099—Vehicle Tire—Henry H. Gerhardt, Nashville, Tenn.
 651,855—Tire Tightener—Seward A. Haseltine, Springfield, Mo.
 652,184—Combined Beach Wagon and Surf-boat—John A. Howell, Washington, D. C.
 651,871—Fifth Wheel—John H. Little, Amesbury, Mass.
 652,066—Automobile—John C. Rantz, Williamsport, Pa.
 651,981—Felloe-shield for Vehicle Wheels—John R. Singer, Atlanta, Ga.
 652,064—Wheel-tire—Paul Weinholt, St. Louis, Mo.
 652,066—Adjustable Toe or Foot Rail for Vehicles—George White, Rock Island, Ill.
 652,416—Vehicle Wheel Hub—Isaac Allaman, Hummelstown, Pa.
 652,386—Vehicle Coupling—George W. Crawford, Delhi, N. Y.
 652,534—Motor Vehicle—Thomas Croil, Milwaukee, Wis.
 652,669—Automobile Vehicle—Jeremiah Donovan, Escanaba, Mich.
 652,258—Vehicle Pole Attachment—Thomas Forstner, New Ulm, Minn.
 652,673—Motor Vehicle—Joseph Greffe, Paris, France.
 652,275—Interchangeable Gear Driving Mechanism for Motor-vehicles, etc.—August Krastin, assignor of one-third to J. G. Schnuerer, Cleveland, O.
 652,278—Motor Vehicle—Frederick A. La Roche, New York, N. Y.
 652,281—Manufacture of Resilient Tires—James M. MacLulich, Dundrum, Ireland.
 652,486—Motor Vehicle—Raymond M. Owen, Cleveland, O.

Trade News.

BY UNCLE SAM.

ALABAMA

EUFALA—The Eufala Buggy Company has been organized with the following officers: T. Pruden, president; Eugene Pruden, secretary and treasurer.

GEORGIA

MACON—The Brown Wagon Company has changed its plant from the old Masterson stable building on Third street to the Talbott & Sons' brick building on Cherry street, where it could get more room. Since the company opened business, less than two years ago, it has grown from a small concern to one of the biggest manufactories of one and two horse wagons in the South.

J. W. Shinholser carries a superb line of carriages, surreys, and buggies, representing the Columbus, Anchor, Westcott and Buckeye manufactories. There is also to be found here a fine line of single and double harness, robes, whips and turf goods. He is also agent for the Sterns and Dixie bicycles and the Cleveland motorcycle. Mr. Shinholser is also agent for the famous Rem-Shaw, Williams, Manhattan and Jewett Typewriters, and carries a full line of supplies. Mr. Shinholser began business here six years ago, the carriage department being added one year ago. His progress has been steady and substantial, and to-day his establishment leads all others in its special lines of trade. Mr. Shinholser is one of those progressive and thoroughly enterprising young men who make success mean something.

Coleman-Ashworth Buggy Co. are worthy of more than passing notice. Their factory, situated at 220 Third street, is the largest in the city and their trade extends all over the State. Their repository contains a large line of vehicles of their own manufacture. They also carry a line of harness, the very best grades being handled. It is the intention of the firm to enlarge their factory and increase the production as the demand for their manufactures is in excess of the present factory capacity. The senior member of the firm is Mr. W. H. Ashworth, one of the best known and most skillful buggy makers. He is thoroughly practical, and for the past six years has been engaged in business on his own account. Mr. Ashworth assumes the general superintendency of the factory, which is a guarantee that all work will be first-class and up to date in every way. The president of the company is G. H. Coleman, son of the late S. T. Coleman, one of Macon's most extensive and best known wholesale merchants. Mr. Coleman will look after the office and financial end of the business, and with his resources and experience this department will be well sustained.

VALDOSTA—Application was made here recently for a charter for a large buggy and carriage factory, the promoters of the enterprise being from Birmingham and Milwaukee. The concern is to be known as the "Henderson Buggy Company," and will do a large manufacturing business here. The members of the company as named in the application for the charter are C. P. and R. P. Henderson of Birmingham, E. E. Rogers of Milwaukee, and C. R. Ashley, S. B. Godwin, H. C. Briggs and G. C. Crom of this city. A location has not been secured for the concern as yet, but it is understood that the members of the company have their eyes upon a place and have about decided upon it. Valdosta has a very large trade in vehicles of all sorts, and the new company will find this city an admirable location for their plant.

ILLINOIS

CHICAGO—National Vehicle Board of Trade, Chicago; promotion of the vehicle trade; incorporators, H. E. Miles, D. M. Barry, W. H. McIntyre.

INDIANA

AUBURN—One of the largest financial deals ever made in Dekalb county was consummated by Simon Snyder disposing of his half interest in the W. H. Killinger carriage manufactory to his partner, W. H. McIntyre, the consideration being \$75,000. The plant covers half a block adjoining the Court House square, and its estimated output is one carriage every ten minutes. Three hundred men are employed in the plant.

TERRE HAUTE—Mr. J. A. Juergens has about completed the removal of his stock of implements, vehicles and stoves from the building he has occupied on South Third street to the former Myers Brothers' building at the southwest corner of Fourth and Main streets, owned by the Warren estate. All of the lines formerly carried have been added to and made more complete. Besides this a great stock of hardware has been put in; also granite and tinware. The departments are arranged as follows: First floor—Granite ware and tin ware, one of the biggest stocks of stoves and ranges and a full line of hardware. The latter stock is kept in the room formerly used by Myers Bros. for groceries. Second floor—Vehicles. The line is already immense, and the half of it has not yet arrived. Third Floor—Implements. Surplus stock is kept on the upper floors and in the basement. The office is at the rear of the first floor.

IOWA

MARSHALLTOWN—This city is to have a new wagon factory. Articles of incorporation have been filed by a company composed of Marshalltown men. The incorporators of the concern are Messrs. Joseph Kurtz, F. S. Wild and Charles A. Buchwald. The company will be located in the old Ketchum wagon works, which were vacated when that company moved to Chicago Heights, and was stranded when the boom burst there a few years since. The company has a paid-up capital of \$12,000, and will begin business as soon as the machinery can be placed in the building.

LOUISIANA

CHURCHPOINT—A meeting was held at the office of Hon. H. Barousse on March 21st, for the purpose of organizing a stock company to establish a wagon factory here. The following officers were elected: Hon. H. Barousse, president; T. Guidry, vice president; Laurent Barousse, secretary; H. J. David, treasurer. The stockholders elected a board of directors, which is composed of H. Barousse, T. Guidry, Laurent Barousse, H. J. David, Edmond Deville, J. D. Murrel and George Jagneaux.

MAINE

GARDINER—Burns & Son have leased the store on Water street formerly occupied by F. P. Collins & Co., and have opened sales-rooms for carriages.

MARYLAND

HAGERSTOWN—Articles incorporating the Hess Carriage Company have been filed. The new company succeeds the Hess Manufacturing Company. The business of building carriages and wagons will be conducted at the old factory.

MASSACHUSETTS

AMESBURY—The firm of Hume Carriage Company is constantly adopting new methods about their plant at Carriage hill, to facilitate the handling of their increased business. The latest thing they introduced is a complete telephone system with six stations, which is working to perfection. All parts of the plant are readily reached from any other department.

BROCKTON—Work has been started on a two-story addition to the carriage factory of the firm of Brownell & Burt on Lawrence street. This will be quite an increase to the capacity of the factory, and will allow the firm an added floor space for the building of carriages. It is to be constructed at the rear of the building, allowing of an extension of the floor space now occupied, and will be run up two stories.

BROOKFIELD—More help are being put to work at the factory of the Lashaway Carriage Company, and the prospect for a busy season is said to be good.

FALL RIVER—Joseph Nadeau, the Stafford square carriage manufacturer, has purchased N. A. Pearce's carriage and blacksmith shop, 102 Fourth street. He took possession of his new purchase April 5th.

HOPKINGTON—L. E. Coolidge reports business rushing at his carriage factory in Woodville. He has now 42 hands employed. Last year he shipped more than 1,000 carriages, the shipping points being all over the New England States, as far West as California, and South as Texas.

MERRIMAC—The carriage factory formerly occupied by Adams, the carriage builder, near the depot, has recently been leased by H. G. Stevens, who will soon resume the business formerly conducted by the firm of H. G. & H. W. Stevens. A gang of men are now at work repairing and renovating the shop, and as soon as this is completed Mr. Stevens will set his men at work.

W. B. Keen & Son, carriage manufacturers, will celebrate their golden anniversary by occupying its new three-story building on Center street. The new block is 55 x 65 feet in dimensions, and looks very substantial and attractive as one enters the large double doors, on either side of which are large plate glass windows 16 feet long, furnishing excellent light for examining the high class carriages.

NORTH ADAMS—A. M. Whipple has just received a patent on a flexible metal invention. This is on a metal tape for sealing carriage bodies, to protect the joints so that the glue will hold. It consists of cloth in the center with metal edges which blend with the wood.

The Turner carriage factory, which was burned some time ago, is being rebuilt. Mr. Turner expects to have the factory ready for work next month.

ROCKLAND—Fred L. Shores, the blacksmith, is about to erect a new blacksmith and wheelwright shop. Mr. Shores will conduct the blacksmith shop and J. W. Higgins the wheelwright shop. The harness shop of H. O. Brewster will be removed to the rear of the new building, and there will also be accommodations for C. T. Cobbett, the carriage builder.

PITTSFIELD—The Pittsfield Carriage Company is making a number of alterations and improvements at its factory on McKay street, including the placing of a large elevator, and building a cellar wall under the shops 40 by 60 feet.

HANOVER FOUR CORNERS—The wheelwright shop owned by the Hanover Carriage Company, and property amounting to \$7,000 or \$8,000, was destroyed by fire on March 10. Four buildings were totally destroyed, and included the livery and express stable owned by H. H. Howland and the blacksmith shop, wheelwright shop, and carriage shop owned by the Hanover Carriage Company. A blacksmith shop owned by Mrs. G. T. Tolman was also badly gutted.

WOBURN—Mr. J. J. Grothe has bought the carriage manufactory formerly carried on by Pollard & Grothe, and of late by Mr. Charles P. Pollard, and will be its proprietor and manager hereafter.

MINNESOTA

FISHER—The warehouse used by Larson Bros. for storage of wagons and implements was burned March 24; loss \$900; no insurance.

NEW HAMPSHIRE

NEWPORT—Charles H. Watts has disposed of his harness making business to H. W. Belknap of Warner. Mr. Watts, who has been engaged in the harness business at this stand for the past sixteen years, will still conduct the carriage trimming and upholstery in town.

NEW JERSEY

PATERSON—Fire destroyed the upper part of James S. Sowerbutt's carriage shop on April 7. The loss is about \$7,000, fully insured.

TRENTON—Grocer Albert Mertz, of East State street, in connection with his grocery business, has started selling carriages and harness.

NEW YORK

FRIENDSHIP—A new Allegany County organization, in which Dr. R. A. Adams of Rochester is one of the main organizers, has just been started at Friendship, and is known as the Friendship Combination Speedway, Bike and Sleigh Company. Besides Dr. Adams there are the following well-known men in the company: H. A. Corbin, E. G. Latta, Albert Hinman, J. T. Burdick, all of Friendship, and J. Daghestanlin of New York. This company will manufacture and place on the market a combination speed wagon and sleigh. J. T. Burdick is the inventor of the contrivance, which, it is believed, will take readily with the public. The new vehicle is made in one and two man body, so as to be easily removed in one minute from buggy gear to sleigh gear, making a one man sleigh weigh fifty pounds. Same one man body buggy can be changed into a bike buggy gear, weighing 110 pounds. Thus the traveler could change from buggy to cutter in a minute's time, while on the road, should occasion require it.

BAINBRIDGE—A. V. Marlette has leased his wagon and paint shop to Charles Teachout. Mr. Marlette will remove to Whitney Point on April 1.

GROTON—At the annual meeting of the Groton Carriage Works, March 28, the following officers were elected: C. W. Conger, president; W. L. Pike, vice president; Ben Conger, secretary; Jay Conger, treasurer; executive committee, Ben Conger, W. L. Pike and John W. Jones; directors, Frank Conger, C. W. Conger, Jay Conger, Ben Conger, W. L. Pike, Dana Rhodes, John W. Jones, E. P. Watrous, E. A. Landon, C. Fitch Cox, and H. G. Moe.

MUNTS—The Bennett dash and fender factory has been moved from Niagara Falls to Hunts, Livingston County.

NORWICH—The firm of Jewell & Brooks, consisting of B. V. and T. A. Jewell and Charles G. Brooks, conducting horse stables and carriage repositories at Norwich and Mt. Upton and a coal business at Norwich, has dissolved by mutual consent. Mr. Brooks retires from the horse and wagon business, which will be continued by B. V. and T. A. Jewell.

NEW YORK—J. K. Rodgers, who has been representing the New York Leather and Paint Co., manufacturers of "Pegamoid," in the West, has been transferred to the Eastern territory.

ROCHESTER—The A. Faber Company has filed incorporation papers with the secretary of state at Albany, for the manufacture of vehicles; the capital stock is \$7,000, and the directors, Alvie Faber, J. P. Faber and H. R. Wood, of this city.

SOUTH PLATTSBURG—Marcus Densmore is building a new carriage repository, and will have a complete line of wagons and sleighs.

SYRACUSE—At the Whitney Carriage Works they are manufacturing the Dodge patent dumping wagon, which is highly recommended. It only requires five seconds to dump a load and close the bodies to reload. By removing the bodies, which can be done without a wrench, the wagon can be used for any other work, making a superior farm wagon. Its capacity is from one to two yards. The best material is used in its construction.

UTICA—The Empire State Shaft Coupling Company, of which George H. Spitzli is the proprietor, also the manufacturer of patent wagon couplings, roller wheel guards and other specialties, will increase the business of both factory and office, the latter will be located at the corner of Fulton and Franklin streets.

WHITE PLAINS—William Deveson has under way another building to increase his ever-growing livery and carriage business. On William street he is erecting a two-story frame building 40 x 60 feet, which, when completed, will be used as a carriage repository. The building will be completed in about six weeks' time, and will cost about \$3,000.

NORTH CAROLINA

ASHEVILLE—Wiley B. Brown & Son have opened a "carriage depository," in Lexington avenue, with an extensive display of carriages and wagons of all varieties.

HENDERSON—Stockholders of the Henderson Carriage and Buggy Factory held a meeting on March 19 to elect officers and transact other business. Capital stock \$20,000. The following officers were elected: S. S. Parham, president; F. R. Harris, vice president; J. Bailey Owens, treasurer; R. J. Corbitt, secretary and general manager. Directors, J. Hill Paham, A. C. Zollicoffer, Robt. Lassiter, C. A. Lewis and S. P. Cooper. Articles of incorporation have been received and arrangements are being made to locate a factory and secure material as rapidly as possible.

The Corbitt Buggy Company incorporated. Capital stock, \$20,000. Incorporators: D. G. Cooper, S. S. Parham, R. J. Corbitt and others.

OHIO

CLEVELAND—The Standard Vehicle Co., located at No. 26-38 Broadway, who have been located there for the past six years, under the management of C. F. Emery, has sold out to the Squires Carriage Co., who have also bought out the plant of Henry H. Garrard. They carry a stock of about \$18,000. This gives them the control of the cheap and medium grade line of pleasure vehicles, also the factory delivery wagon and the farm and graders' wagon line. They will occupy the plant of the Standard vehicles and close the Garrard plant.

MADISON—The fire which destroyed the blacksmith shop and tiring department of the Madison Wheel Co. on April 11 will not interfere with their filling all orders given, promptly. The company's main building and stock of wheel material was not injured, and they have arranged for temporary quarters while rebuilding. They expect to have the tiring department rebuilt in thirty days.

HAYESVILLE—Fire at Hayesville on April 2d destroyed, among other buildings, Rush's carriage shop.

PENNSYLVANIA

HOLLIDAYSBURG—The wagon manufacturing and blacksmith establishment of the Gorsuch Brothers, at Roaring Spring, was destroyed by fire on April 9. The loss is \$1,500.

MILTON—J. C. Sevdal has the foundation of a carriage factory started on Centre street. The building will be a two-story structure 65 x 30 feet. He will construct and repair all kinds of vehicles.

SHERBROOK—Clark Gordon has bought the stock and fixtures of the late W. J. Irwin, and taken over the lease of the store, where he has put in a most complete line of wagons and carriages, as well as agricultural machinery of all kinds.

WASHINGTON—C. H. Spriggs is erecting a buggy repository on West Maiden street. The structure will be 35 x 100 feet in dimensions, and two stories in height. One hundred vehicles can be stored in the building.

RHODE ISLAND

WOONSOCKET—The Woonsocket Wagon Manufacturing Co. has been incorporated with a capital of \$10,000. The company, which has E. E. Southwick as president, and Dr. F. L. Cleveland as treasurer, are successors to E. E. Southwick & Co., Worrall street.

SOUTH CAROLINA

ANDERSON—Messrs. Frank Johnson and Furman Evans will, on April 1st, under the firm name of Frank Johnson & Co., open up a big carriage and wagon repair and repaint shop here.

TENNESSEE

CHATTANOOGA—The Chattanooga Wagon Company have purchased three acres of land adjoining their factory at East Lake. The object is to enlarge and extend their factory by the erection upon this area of four large frame buildings. These buildings when finished will be used as a place for preparing the lumber before it is finally conveyed into wagons.

LAUREL—The Lindsey wagon factory, the plant of which was destroyed by fire at Sandersville some weeks ago, will be moved to Laurel and rebuilt. The capital has been increased from \$8,000 to \$50,000. The incorporators of the newly organized company are: S. W. Lindsey, John Lindsey, J. E. Parker, W. F. Rumble and F. W. Pettibone. Work on the buildings, etc., will be operated at the earliest possible date. The Lindsey wagon has eight wheels, and was intended by the inventor and is principally used for hauling logs, but they have for the past few years been quite extensively used for hauling cotton.

VIRGINIA

RICHMOND—R. H. Borher's Sons have completed the repairs to their factory made necessary by the recent fire, and have restocked the repository with a completely new line of vehicles of latest style and finish. They have also a fine line of harness, whips, etc.

VERMONT

RUTLAND—Davis & Vannier, of Flint, Mich., have bought the carriage business of N. R. Reed, and have taken possession. The new firm will make this the eastern branch of its business and a supply depot for New England. The business here will be in charge of Charles J. Vannier.

WOODSTOCK—A petition in voluntary bankruptcy has been filed by Charles L. Kingsley, a carriage maker of Woodstock, who has liabilities of \$2,167, of which \$1,523.50 is entered as unsecured, and assets of \$1,891, of which \$369 is exempt.

WISCONSIN

RACINE—Articles of incorporation for the Racine Pole and Spring Company have been filed. The capital stock is \$10,000, and the incorporators are N. L. Holmes, D. J. Morey and F. A. Morey.

Wants.

Help and situations wanted advertisements, one cent a word; all other advertisements in this department, 5 cents a word. Initials and figures count as words. Minimum price, 30 cents for each advertisement.

SITUATIONS WANTED.

Wanted—A situation by a first-class carriage and wagon painter, as foreman letterer, ornamentor and monogrammer. Best of references. "P. F., Box 64," care THE HUB.

Wanted—Foremanship or contract carriage painting. Capable, long experience. Can manage any size paint shop, day, piece or contract. Best references. Address, "T. T.," 222 East 24th street, New York.

New York City foreman carriage painter desires position in New York City or New Jersey. Highest grade work. A1 stripper and finisher. Address, "D. W.," care of THE HUB.

Experienced paint and varnish salesman desires to make change. Best references. Address, "VARNISH," care of THE HUB.

Position wanted by a first-class carriage designer and practical constructor, who is also mechanical draftsman, having had several years' experience on machinery on motor carriages. I am a practical mechanic and artistic designer, and have had several years' experience with some first-class carriage builders. Am familiar with both light and heavy work. A position with a large firm preferred, where the services of a first-class man would be appreciated. Address, "BOX 61," care of THE HUB.

HELP WANTED.

Wanted—A first-class varnisher. Steady work guaranteed the year round. Address, GOULD'S CARRIAGE FACTORY, Scranton, Pa.

Wanted—To come South, two first-class body makers, two blacksmiths and two trimmers. Address, "SOUTH," care THE HUB.

Wanted—To correspond with a first-class carriage draftsman who has also some practical knowledge of the carriage business. To the right man there is an attractive opening. DURANT-DORT CARRIAGE CO., Flint, Mich.

We would like several traveling men who make it their particular duty to see the carriage dealers, to carry our goods as a side line. Easy sellers and they are the best on the market. One or two men who cover the eastern and central States thoroughly, and who see their trade frequently, could do exceptionally well. Write for full particulars to "MANUFACTURER," Box, 65, care THE HUB.

Wanted—Hustlers to secure new subscribers for THE HUB. A good chance to make money easily. Subscription price, \$2.00 a year. Liberal commission paid. Address Subscription Department, THE HUB, 24-26 Murray street, New York.

PATENTS.

PATENTS—H. W. T. Jenner, patent attorney and mechanical expert, 608 F street, Washington, D. C. Established 1883. I make an examination free of charge, and report if a patent can be had and exactly how much it will cost. Send for circular.

FOR SALE.

Solid rubber tire patent. Entirely new principle. Cannot get off the rim. Economical. Experienced tire men say it is the best they have ever seen. For particulars, address "RUBBER TIRE," care of THE HUB.

BUSINESS OPPORTUNITIES.

I own controlling interest in a shaft coupler and anti-rattler that has been on the market for five years, and which is now being used successfully and in large quantities by many of the leading carriage builders. Other duties are commanding my attention and I would be willing to dispose of my interest for a reasonable figure. A splendid opportunity to buy an established business. Address, "SHAFT COUPLER," care THE HUB.

I am authorized to find a buyer for the controlling interest in one of the best carriage and buggy plants in Ohio or the entire country. The gentleman who desires to sell his interest has made his fortune out of it, and has reached the age when he desires to retire. The stock is worth above par to-day, but if the right party can be found, a controlling interest would be sold to him at 75 cents on the dollar, with only a limited amount of cash to be paid down, the balance to be paid in annual installments. The capital stock is \$80,000. Plant is located in one of the best towns in Ohio, central, and has best of railroad facilities. High grade work and averages about 4,500 jobs a year. Shop has capacity to build 10,000 of a cheaper grade. For full particulars, address, "EXCEPTIONAL OPPORTUNITY," care of THE HUB.

COLOR SECRETS.

No. 40.—Prosperity.

We take it for granted that you are not in the humor to experiment. You are not casting about for something that costs a trifle less, and will not do half as well. You, also, are busy with first-class work. Your customers are not demanding cheapness. They and you, in these prosperous times, have the spirit of true economy. People are always in the spirit of true economy when times are prosperous; for true economy is to make sure of reliable goods. Adversity is the mother of extravagance. People always squander money in hard times. They get makeshifts, then; and pay for better than they get. When business flourishes they are willing to pay for what is genuine; and the genuine lasts long enough to make up several times the difference in cost.

Our Varnishes and Colors are for busy people, who do good work, and need what is always reliable. You know the varnishes. They have been so long on the market, and have a reputation so well established, that they need only the advertising which our customers give them. Our colors are not so widely known; but the multitudes who have used them understand that they are made to go with the varnishes. They are equally reliable and fine. Their fineness is their reliability. We have not the slightest fear that you will be disappointed in their value, or that you will ever complain of the price. We are here to stay; and when you have used a few Murphy Colors you will be added to the long list of happy patrons who are glad to do our advertising for us.

MURPHY VARNISH CO.

SUPERIOR STRENGTH



PHINEAS JONES & CO
NEWARK, NEW JERSEY.

You want "Buoyancy" in the Pneumatic Tire Wire=Wheel, coupled with strength sufficient to resist the shock of travel over uneven roads. Our WOOD RIMS for WIRE WHEELS==Whether for "Bike Wagons," Sulkies or Automobiles, are guaranteed by us to be the most satisfactory rim. If they were not we could not afford to ship as many as we do and stand back of the guarantee.

FREE

We will send you a sample section, pre-paid, and without charge, showing our Carriage Rims or Automobile Rims with a section of tire mounted and the manner of retaining same, if you will send us your address.

The American Wood Rim Co.,
BRADFORD, PA.

Please mention "The Hub" when you write.



CRANE & MACMAHON,

NO. 18 SOUTH STREET, NEW YORK.

FACTORIES:
VIRGINIA and NORTH CAROLINA WHEEL CO., ST. MARY'S SPOKE WORKS,
and WAPAKONETA BENDING CO.

WHEELS SARVEN, WARNER,

and WOOD HUBS, Heavy and Light. Heavy Wheels for Business Wagons a Specialty.

MANUFACTURERS OF ★ BRANDS OF
CARRIAGE AND WAGON WOOD STOCK,
RIMS, SPOKES, HUBS, ETC.,
AND HARDWOOD LUMBER.
SEND FOR CATALOGUE AND PRICE LIST.

The Hickory Nut Brand is made of Second Growth Hickory Rims, Spokes and Elm Hubs.

The Acorn Brand is made of Second Growth Oak Spokes, Bent Oak Rims or Sawn Felloes. Thoroughly Seasoned Stock.

G. W. SEBOLD, Pres't

J. H. BEACHLEY, Vice-Pres't

F. S. BARRICK, Sec'y.

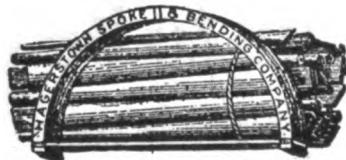
S. A. MUNN, Treas.

A. S. HARING, Sept.

The Hagerstown Spoke & Bending Co. Hagerstown, Maryland, U. S. A.

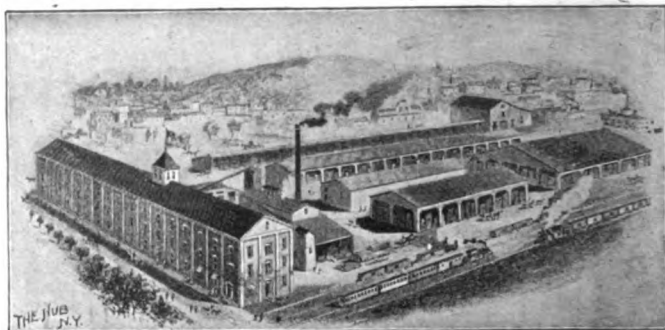
MANUFACTURERS OF

Spokes and Rims



EXPORTERS OF
HARDWOOD, OAK,
HICKORY AND WALNUT
LOGS AND LUMBER.

The celebrated
"horseshoe"
brand, of which
we export
largely. All
Foreign and
American
patterns of
Spokes.



A. B. C. Code Used.
Correspondence Solicited. Cable Address, "SEBOLD."

BURR PATENT WHEEL

Advantages in the BURR WHEEL:



PATENTED JAN. 25, 1880.

- Large Hub, suitable for any kind of Axle. ✓
- Long and heavy tenons on spokes. ✓
- Long shoulders on spokes. ✓
- A flanged wheel with staggered spokes. ✓
- A rivet on each side of every spoke; none passing through the spokes, using twice the number of rivets used in other makes of wheels. ✓
- A light wheel, both in weight and appearance. ✓
- A wheel that will stay in dish. ✓
- A wheel that will stand in the hub. ✓
- Easy to repair. Three times stronger at the hub than any other wheel made. ✓

WRITE FOR PRICES.

BURR WHEEL Co.,

CAMPBELL AND PARK AVES.,
... CHICAGO, ILL. ...

Please mention "The Hub" when you write.



The Best at the Price of the Cheap.

Wire wheels with hubs attached, any size or style, for either solid or pneumatic tires.

Our plant is the best in the United States, fully equipped with up-to-date labor saving machines.

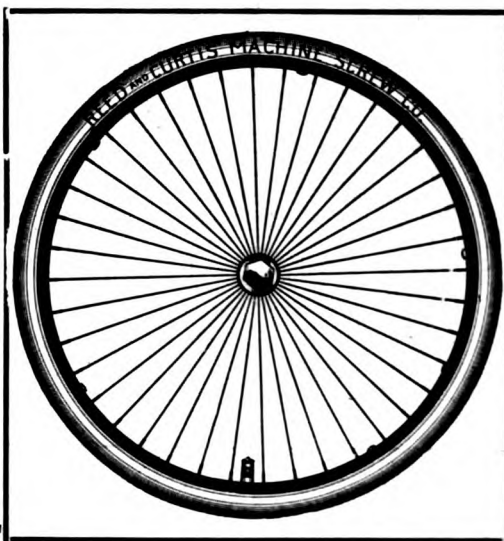
No order will be too large for us to handle. All orders will be filled promptly.

We will always carry a large supply of hubs turned from the bar, or hubs of the tubular type, and we will sell them at the same price that you are now paying for cast iron, or any other cheap grade hubs.

Before placing your contract be sure and see our line and get our quotations.

WRITE FOR CATALOG "D."


REED & CURTIS MACHINE SCREW CO.,
WORCESTER, MASS.

FRENCH STYLE WOOD HUB COACH WHEEL.



Wooden
Vehicle

WHEELS of every description

WITH OR WITHOUT

Steel, Iron or Rubber Tires.

Edward Stinson & Co.

...MANUFACTURERS...

327-335 North St., BALTIMORE, MD.

PRICE MODERATE : :
BEST WORKMANSHIP

HOOPES BRO. & DARLINGTON

WESTCHESTER, PA., U. S. A.

Makers
of...

WHEELS

For

**Carriages,
Automobiles,
Business Wagons
and Trucks.**

Warner, Sarven, Kenney, Sweet, Wood Hubs.

THE WOODS is full of CHEAP NECK YOKES and NECK YOKE CENTERS, but when a carriage manufacturer wants a good, safe yoke for his own use he always buys COVERT'S. You should insist upon it and accept no other.



Our assortment supplies the demand in the States and foreign countries for any style of yoke or centre.
Every Yoke is Tested and Every Centre is made of Oak Tanned Harness Leather.

COVERT'S SADDLERY WORKS

1875



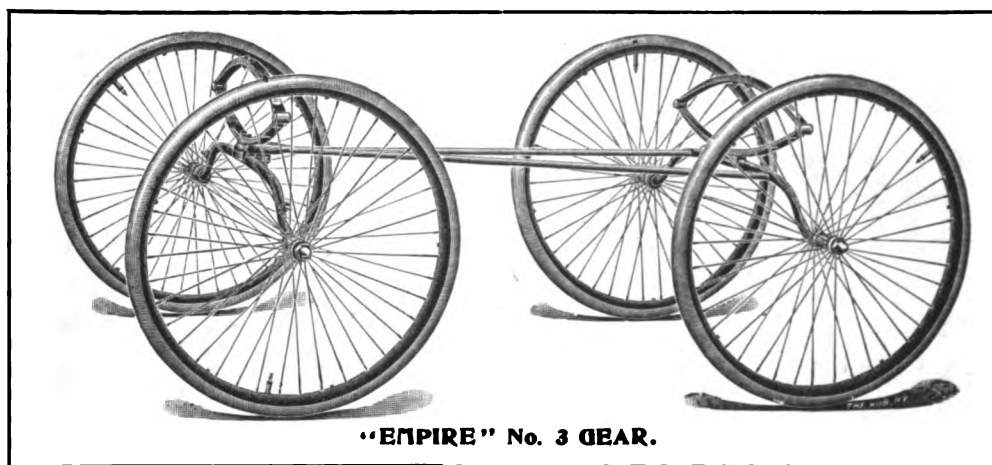
1900

We are the oldest and most extensive manufacturers of Neck Yokes and Neck Yoke Centres. Also Harness Snaps, Horse and Cattle Ties, Wagon Jacks, etc., etc. Ask your jobber for Covert's.
FARMER, N. Y., U. S. A.

Please mention "The Hub" when you write.

*It is anything but queer, that the ball-bearing gear,
Called the "Empire," should captivate the town,
For it stands without a peer, you can say it without fear
That any man is going to call you down.*

THERE ARE SEVERAL REASONS WHY
"EMPIRE" Pneumatic Gears
ARE THE BEST.



*This Gear is fitted with Empire Ball-Bearing Hubs.
You can have Endless Groove Boxes if you prefer.*

- "EMPIRE" Gears have hubs turned from solid cold-rolled bar steel.
- "EMPIRE" Gears have Cups and Cones turned from best tool steel.
- "EMPIRE" Gears have the new cushioned fifth wheel—no oiling needed.
- "EMPIRE" Gears have our patent Shaft Couplers—no bolts, springs, straps, screws or rivets.
- "EMPIRE" Gears have high-bend Axles, bent hot and will retain their shape.
- "EMPIRE" Gears have Whiffletree Couplings without pointed bolt ends or heads.
- "EMPIRE" Gears have no useless back braces to help break the reach.
- "EMPIRE" Gears have tubular or wooden reaches—as you wish.
- "EMPIRE" Gears are drawfiled ready for painting.
- "EMPIRE" Gears are complete, and all ready for the body.
- "EMPIRE" Gears with Empire Ball-Bearing Axles will run more miles with one oiling than any other gears on earth.

Order a sample Gear to-day, and satisfy yourself that they are the best.

NORTH EASTON MASS., April 2nd, 1901.

GENTLEMEN:
Please send me catalogue and prices and discount Ball Bearing axles.
I have used your axles for 3 or 4 years, good as it was when I first had it.
Oil it about three times a year. Shows no wear to speak of.
Yours truly,
E. W. GILMORE.
P.S.—Want axles for light carriage for 4 people, what size do I want?

Standard Anti-Friction Equipment Co.,

General Offices, 50 BROADWAY, N. Y. CITY.

Factories at CHICAGO, ILL., WILKES-BARRE, PA., and AMESBURY, MASS.

Please mention "The Hub" when you write.

NESS BROS. & CO.

Manufacturers of

SARVEN,
WARNER,
WOOD HUB,
BANDED HUB,
STAR OR KENNEY,
SHELL BAND,

WHEELS

CAPACITY, 100 SETS PER DAY.

Wheel Stock,

ALL SIZES,
WITH OR WITHOUT
STEEL, IRON OR
RUBBER TIRES.

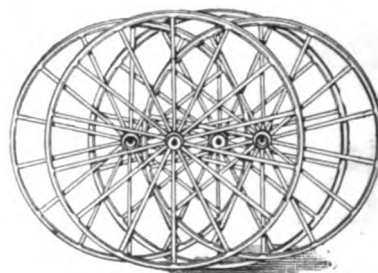
Broad and Philadelphia Sts., YORK, PA.

Write for New Catalogue just issued.

PHILIP LEBZELTER,

LANCASTER, PA.

Wheel Material and Bent Wood Work.

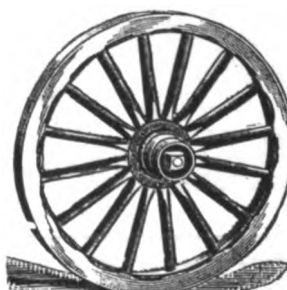
Bike Wagon
WheelsSteel Tired
Wheels

WE PUT

BEST RUBBER TIRES ON ALL STYLE WHEELS.**CARRIAGE WHEELS**

of all kinds for Domestic and Export Trade.

AUTOMOBILE WHEELS
A SPECIALTY.



WRITE FOR PRICE LIST.

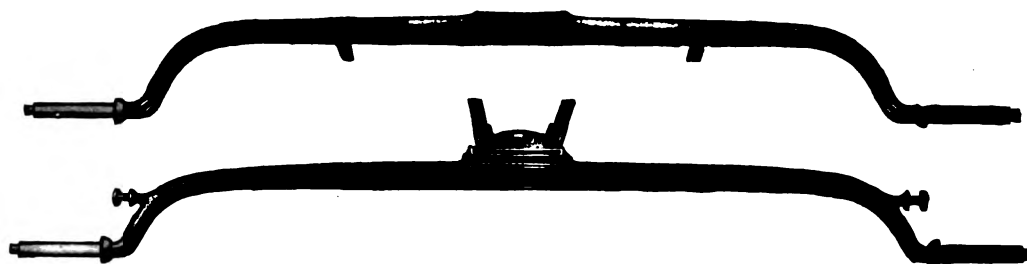
CARR, PRESCOTT & CO.,

Successors to

HIDDLE & SMART CO. AND LOCKWOOD & BROWN,

AMESBURY, MASS.

Telephone, No. 68-5.

ST. LOUIS WIRE WHEELS AND AXLES*Ball Bearing or Long Distance.*

WE make Steel Crescent and Drop Centre
Rims, Automobile Running Gears and
Boilers. ♣ ♣ ♣ ♣ ♣ ♣ ♣ ♣ ♣ ♣

Our Goods are High Grade
and Prices Right. ♡ ♡ ♡

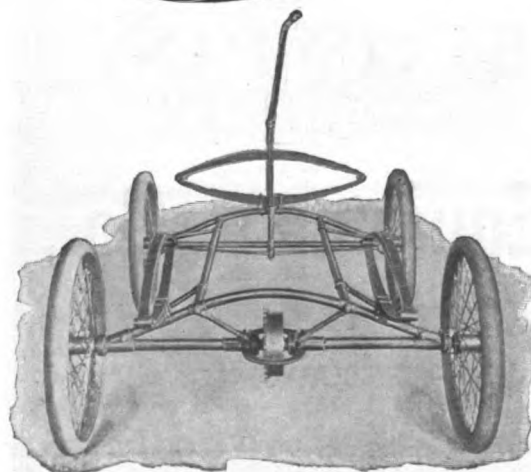
Our "free to the trade" Catalog tells the tale.

J. H. NEUSTADT CO.,

9th Street and Clark Avenue,

ST. LOUIS, U. S. A.

Please mention "The Hub" when you write.



**High
Grade
Wheels.**

Zwick & Greenwald Wheel Co.
DAYTON, OHIO.

Manufacturers of

**Vehicle
...Wheels**
of Every Description.



Trade-Mark.

WHEELS

**LIGHT
AND
HEAVY.**

... Sarven, Compressed and Wood Hub ...

Capacity 250 Sets Per Day.



Highest Award

at World's Fair

FOR SUPERIORITY IN CONSTRUCTION, WORKMANSHIP AND MATERIAL.



THE WAPAKONETA WHEEL COMPANY,
WAPAKONETA, OHIO.

Don't you mind if others say
That advertising doesn't pay.
Such people surely—there's the rub—
Have never patronized THE HUB.

You are reading this ad.
Why don't you buy this
space, so others will read
about your business?

Please mention "The Hub" when you write.

FINE CARRIAGE WHEELS.

E. FLICKINGER,
President and Manager.

Capacity 500 Sets per day.

OUR TIRE PLANT ENABLES CARRIAGE AND WAGON MANUFACTURERS TO HAVE THEIR WHEELS TIRED BY EXPERIENCED WORKMEN. CAPACITY OF TIRE DEPARTMENT, 250 SETS PER DAY. CORRESPONDENCE SOLICITED.

THE FLICKINGER WHEEL CO.,
MANUFACTURERS,
GALION, OHIO.

Don't Worry

If you have trouble getting finished SARVEN PATENT HICKORY SPOKES $1\frac{3}{8}$ and under, write us. Our prices will surprise you. Of course we make all kinds. Write us now.

SUWANEE SPOKE & LUMBER CO.,
KUTTAWA, KY.

EBERLY & ORRIS,

Mechanicsburg, Pa.

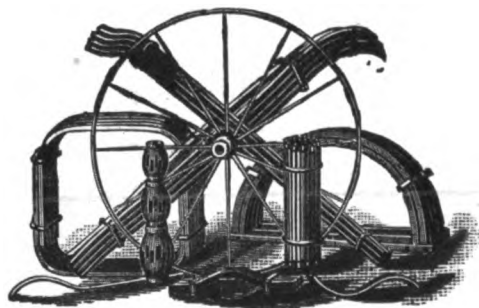
Manufacturers of

**LIGHT and
HEAVY
WHEELS**

Wheel Stock and
Hard Wood Lumber.



The Wheel and Wood Bending Company,



WHEELS

MANUFACTURERS OF

Wheel Material and Bent Wood,

Send for Catalogue.

BRIDGEPORT, CONN

BOOB'S DROP AXLE DOUBLE AND SINGLE
ELLIPTIC SPRING GEAR, with
Short Turn Fifth Wheel.



Adapted for Milk, Bakery and Grocery Wagons, all complete, with wheel and shaft ready for body, for \$24.00

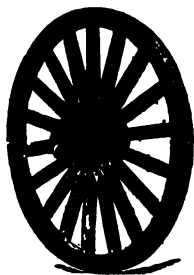
Send for catalogue, giving prices on a full line of Buggy, Bike and Business Wagon Gears, Wheels, Carriage and Wagon Hardware of every description.

WILLIAM W. BOOB, 450 E. MAIN STREET,
CENTRE HALL, PA., U. S. A.
Export Orders a Specialty.

Want a little more business? Try a card in

THE HUB.

Results are sure to follow.



BALTIMORE HUB FACTORY.

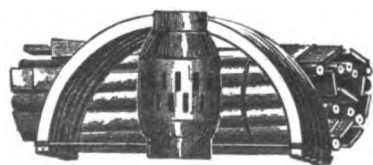
We have now enlarged our factory with the latest improved WHEEL MACHINERY and, having a surplus stock, we are now in position that we will not be undersold. We are prepared to meet all competition.

GUARANTEE.—All our X and XX Wheels will be covered by a very liberal guarantee for one year; should any XX wheels prove defective, will be replaced with new wheels, customer keeping old wheels for their trouble; any X grades proving defective will be repaired free of charge. Will make a SPECIALTY of good No. 2 and No. 1 wheels, that will give satisfaction. Rouse bands furnished on X and XX grades free of charge when desired.

JOHN STINSON, Proprietor,
326-332 N. Holliday St., BALTIMORE, MD.

WHEELS

Warner, Sarven,
Plain, Star
and Compressed.



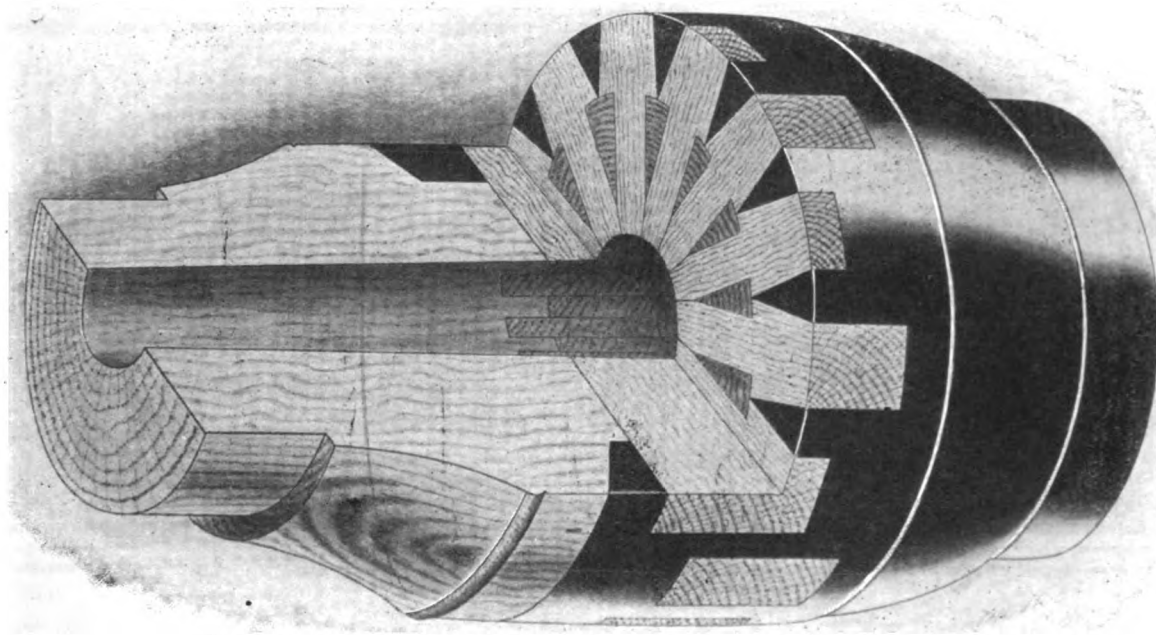
J. B. KOLLER & CO.,
Manufacturers of **Spokes, Rims, Hubs and Rough Wagon Poles,**
MECHANICSBURG, Cumberland County,
PENNSYLVANIA.

Please mention "The Hub" when you write.

FINE CARRIAGE WHEELS.

WE MANUFACTURE

SCHAD, SARVEN, WARNER, SWEET'S, KENNEY, COMPRESSED
BAND AND WOOD HUB CARRIAGE WHEELS.



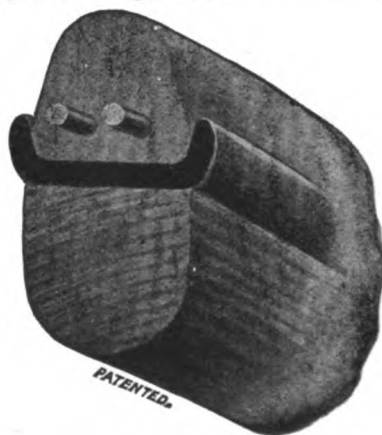
OUR LEADER IS

The SCHAD HUB.

It is handsome in appearance, the strongest Hub on the market, and
it is impossible for spokes to get loose in the hub.

We have one of
the most complete
plants in the United
States for putting on
steel tires.

We also apply Solid
Rubber and Pneumatic
Tires at our Factory,



and sell the wheels
complete. We use the
Kelly-Springfield solid
rubber tire and the
Clark Valveless Pneu-
matic tires, two of
the best rubber tires
made.

AVOCA WHEEL CO.,

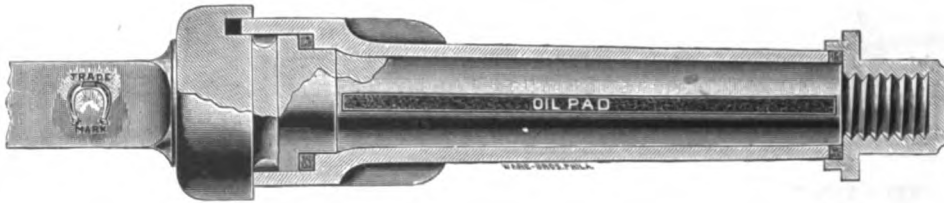
ESTABLISHED 1890

AVOCA, N. Y., U. S. A.

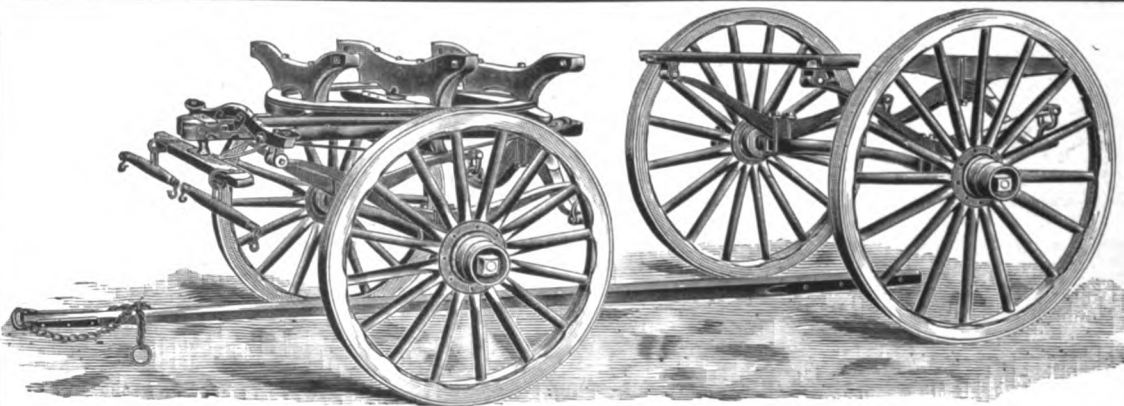
Please mention "The Hub" when you write.

Manufacturers of "Collinge Collar" and other styles of Axles for "Long Distance" use.

Also Manufacturers of "Concord Express Axles." the best



SPEARS AXLE CO., WHEELING, W. VA., U. S. A.



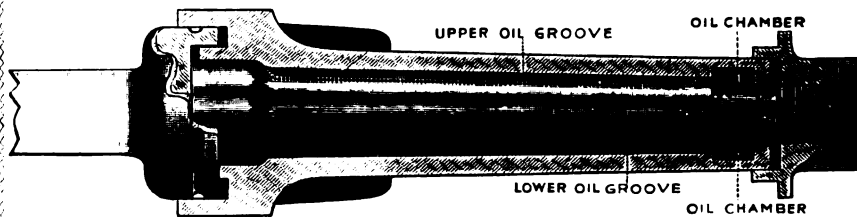
Complete Gears as shown above, ready to receive body, for light and heavy work, can be furnished promptly. In ordering give full specifications, or such description as will enable us to make up specifications. Dealers in wagon materials will quote prices on our gears.

**SELLE
GEARS**
THE SELLE
GEAR CO.

AKRON, O.

Anderson's "Long Winded" Axle.

**Guaranteed
to run 1,000
to 2,000
Miles with-
out re-oiling**



(One now being tested has run since March 20th, 1900, without re-oiling, and up to March 1st, 1901, had travelled, by actual measurement, **1556 Miles,** and will run a month or two longer.)

**HESS SPRING AND AXLE COMPANY, Licensees,
CARTHAGE, OHIO.**

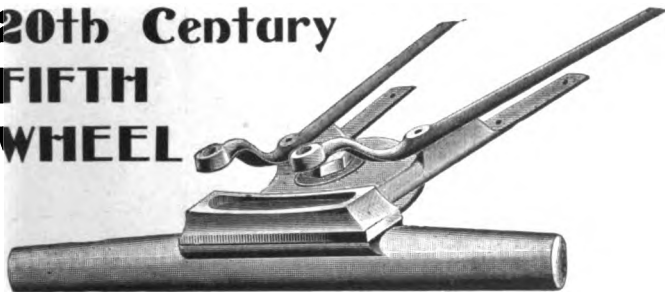
Hartford Axle Company.

Good Axles are the result of experience, careful attention to smallest details, and the constant desire to improve. The continual upbuilding of our reputation has been guided by these principles, and a trial of our work will convince you of the excellence of our product. We make all styles, including the Brewer.

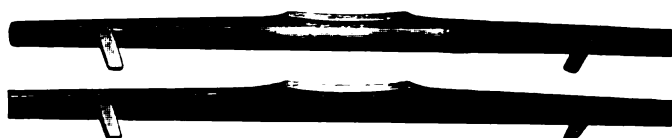
- - **Dunkirk, N. Y.**

Please mention "The Hub" when you write.

20th Century FIFTH WHEEL



Swaged or Round Pattern for Buggies or Surreys.
Patented September 4th, 1900.

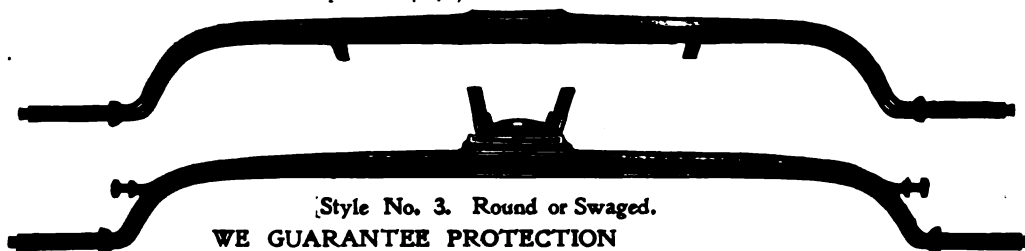


Rear Axle Center, with Solid Forged Perch Connections for
Buggies or Surreys, Round or Swaged.

**Our Naked Axle Parts
are Winners.**

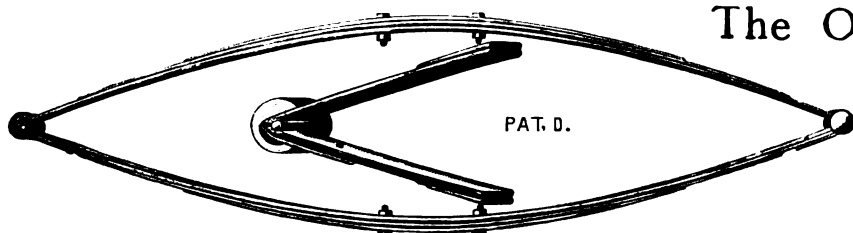
SAVE TWO WELDS AND
SAVE MONEY.

D. Wilcox Mfg. Co.,
Mechanicsburg, Pa.



Style No. 3. Round or Swaged.
WE GUARANTEE PROTECTION
20TH CENTURY FIFTH WHEELS.

THE BEST THAT CAN BE MADE...



The Osgood Morrill Spring as
made under the person-
al direction and approval
of the inventor by

TUTHILL SPRING CO.,

315 Clinton Street, Chicago, Ill.

NO RATTLE, NO FRICTION, NO NOISE.

Write for particulars and prices.

ATTENTION, DRAUGHTSMEN!

We offer \$300 for the best New Designs of Straight Sill Surrey, Ladies' Phaeton, and Piano box body and seat, or \$100 for either one.

These designs must present new and attractive features, must be simple in construction, for economical building in large body factory (stick seats not wanted). Working drawings will be required of successful designer; competition closes June 1st, 1901. Successful Designs to become our exclusive property.

Payment will be made and unsuccessful designs returned July 1st.

Privilege reserved to reject any or all designs offered.

This advertisement appeared last year, and accepted designs were paid for. For evidence of good faith, we refer to THE HUB.

Carriage Builders.

SECHLER & CO.
CINCINNATI, OHIO.

FINE CUTS

help your business more than you think. Let us quote prices on your future wants in this line.

TRADE NEWS PUBLISHING CO., 24-26 Murray Street, New York.

Please mention "The Hub" when you write.

THE OLD RELIABLE

No. 30. No. 40. No. 60. No. 70. No. 80.

OUR FACILITIES enable us to furnish our IRONED UP SETS BETTER and AT LOWER PRICES than you can produce them, no matter how many or how few you make.

BETTER INVESTIGATE THIS.

THE J. A. COOPER AND D. P. CO.

STRUTHERS, OHIO, U.S.A.

RECOGNIZED LEADERS and the only PRACTICAL CAR-RIAGE MAKERS in the GEAR WOOD TRADE.

Send for CATALOGUE E

THE NIELSON Roller-Bearing Fifth Wheel.

is the only PERFECTED and PRACTICAL ROLLER-BEARING FIFTH WHEEL on the Market to-day.
HAS NO EQUAL. DON'T BE FOOLED.

WHY THE NIELSON IS THE BEST.

It is the product of a practical wagon builder, who has made a careful study of his trade and the necessity of developing something new in the way of a fifth wheel that would overcome the friction caused by the old circle in use on all kinds of platform vehicles. The present fifth wheel is the outcome of years of experiment, and contains all the good features lacking on other fifth wheels. The rollers, while an important part of the Nielson patent, without the other features, would be as worthless as some others that are offered as "the best."

Don't let anybody tell you that So and So's Roller Bearing Fifth Wheel is just as good as the Nielson.

Roller-bearings, like ball bearings, to prove of value must be properly housed. This is one of the greatest practical points on the Nielson, as it is constructed so that neither dust nor the elements to which fifth wheels are subject can affect the rollers.

As the rollers overcome all friction, the use of oil, grease or other lubricants is obviated, and thus when once the Nielson is attached to a vehicle, the user need give this part of the vehicle no further thought, as it will outlast any vehicle. It always works easy, and never gets out of order. No worry about broken shafts or poles, as the Nielson turns easily under the heaviest load. It is a godsend to dray horses, as well as to the users of vehicles for mercantile purposes, as the Nielson not only saves the horses, but prolongs the life of the vehicle.

YOU WANT THE BEST.

GET THE NIELSON.

Ask your dealer or write for full particulars to
**CHRISTEN NIELSON, 745 Third Avenue,
BROOKLYN, N. Y.**

Please mention "The Hub" when you write.



Attracting Attention.

The practical superiority of the three axles sold by us is attracting the attention of the carriage and wagon trade throughout the country.

To-day, the Mather 1000-Mile Axles, the Cleveland 6 1/2 Axles, and the Standard Roller Bearing Axles are the most popular on the market. For the styles of vehicle for which they are intended they excel all others.

More of them are sold to-day than ever before.

Manufacturers will find it profitable to use these axles, and dealers who have at heart the interests of their trade should insist on them.

CLEVELAND AXLE MFG. CO.,
CANTON, OHIO.

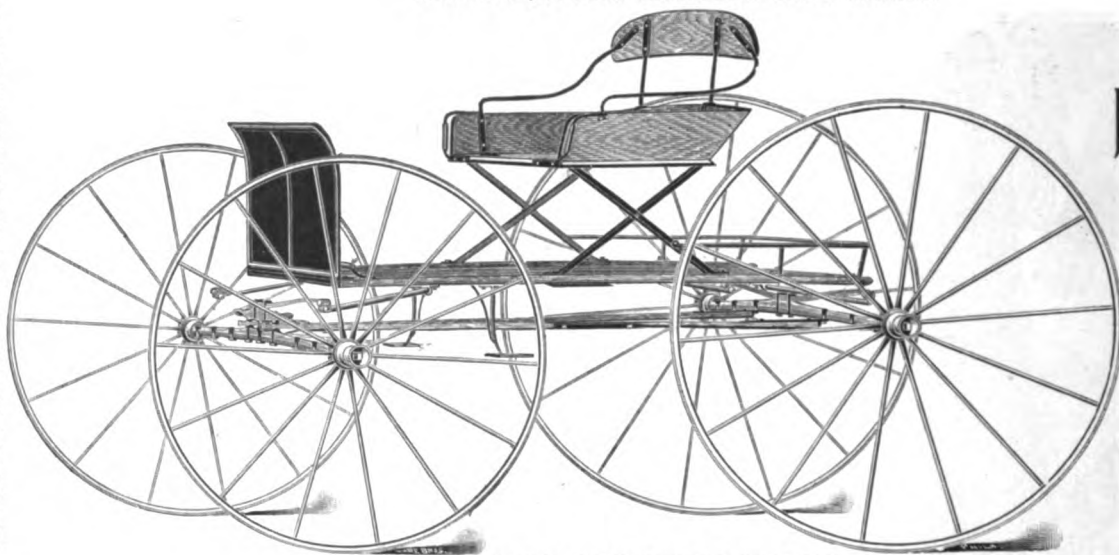
CHARLES AUSTIN BATES N. Y.

The Best Buckboard on Earth!!

Is made by using THE MULHOLLAND SPRINGS.
The Popular Vehicle from Maine to California.

We can furnish you the complete job in the white, and make a specialty of furnishing the slat bottom part with springs attached. Or sell the springs alone to those who desire to manufacture the wagon themselves.

WRITE FOR OUR CATALOG AND PRICES.



No. 44. MULHOLLAND BUCKBOARD WAGON.

**MULHOLLAND
SPRING &
GEAR CO.**
**DUNKIRK,
N. Y.**

C. Cowles & Co.,

New Haven, Conn., U. S. A.

Ask us to quote on Carriage and Coach
Lamps, Axle and Saddle Clips, Oval and
Flat Corner Irons, "Excelsior" Curtain
Fasteners,

**Milled Shackle Bolts,
Cloth and Metal Buttons,
Door Handles, Shaft Tips.**

WE ARE HEADQUARTERS FOR ABOVE.

**LARGEST VARIETY OF LAMPS FOR
1901.**

THE St. Paul Road.

(Chicago, Milwaukee & St. Paul Ry.)

**ELECTRIC-LIGHTED
TRAINS.**

DAILY BETWEEN

**Chicago
Des Moines
Sioux City
Omaha**

All Coupon Ticket Agents sell tickets via
Chicago, Milwaukee & St. Paul Ry.

F. A. MILLER, General Passenger Agent,
CHICAGO, ILL.

Please mention "The Hub" when you write.

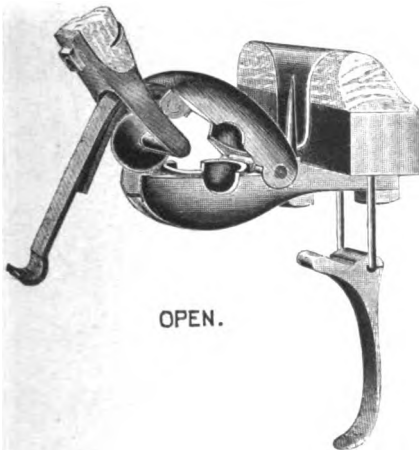
CONSTRUCTION AND MATERIAL ARE POINTS WE ARE PROUD OF IN THE MULHOLLAND SHAFT COUPLER.

CONSTRUCTION.

THE Mulholland Coupler is Quick Shifting, Ball-Bearing, Leather Bushed. The Bushings are cemented into jaws and lined with Graphite. It has a non-breakable spring of uniform width and thickness, and a dirt proof flange and interlocking device. It takes up its own wear.

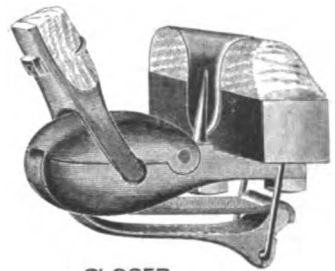
MATERIAL USED—ALL STEEL.

THE Shaft and Pole Ends are forged from Bar Steel. The Springs are of Crucible Steel, while the Jaws, Levers, etc., are of Bicycle Steel. The STRONGEST, and it may be well to state the most EXPENSIVE materials used in Shaft Coupler construction.



OPEN.

THIS IS WHAT MAKES
THE MULHOLLAND the
Most Perfect Shaft Coupler
on the market. : : : : :
A sample pair will convince
you of its merits. : : : : :



CLOSED.

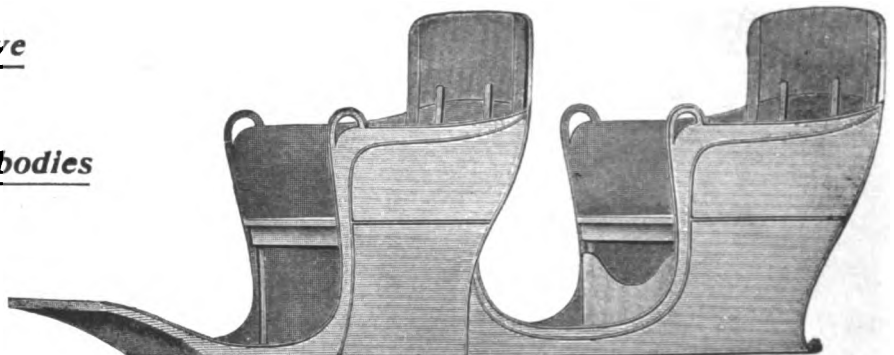
Mulholland Spring Co., Dunkirk, N. Y.

BODIES! BODIES! BODIES!

Many new and attractive
designs for 1900.

A choice lot of stylish bodies
always in stock.

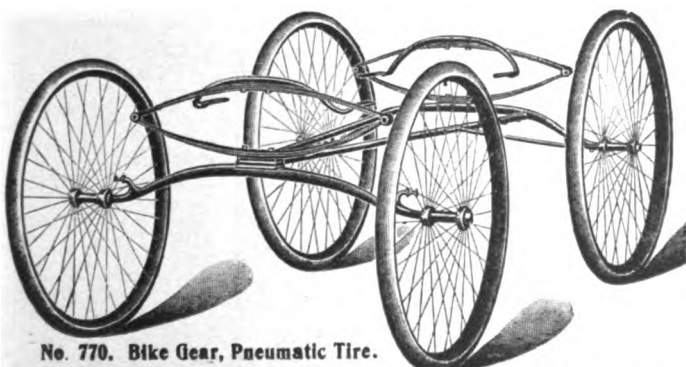
REQUEST WILL BRING
CATALOGUE AND PRICES.



No. 153. SURREY. Price, \$10.00.

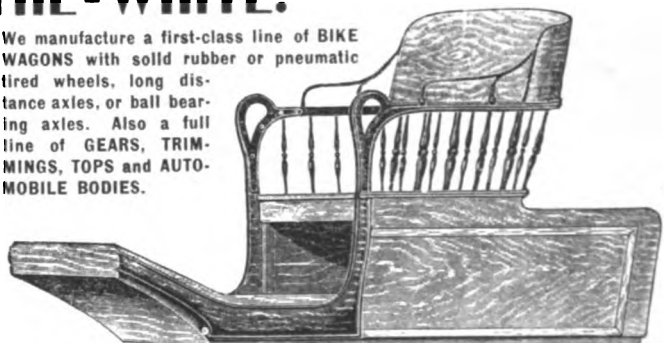
CINCINNATI PANEL CO., Cincinnati, Ohio.

SCHUBERT'S WAGONS IN-THE-WHITE.



No. 770. Bike Gear, Pneumatic Tire.

We manufacture a first-class line of BIKE
WAGONS with solid rubber or pneumatic
tired wheels, long dis-
tance axles, or ball bear-
ing axles. Also a full
line of GEARS, TRIM-
MINGS, TOPS and AUTO-
MOBILE BODIES.



AUTOMOBILE BODY.

SCHUBERT BROS. GEAR COMPANY, ONEIDA, N. Y., U. S. A.

Please mention "The Hub" when you write.

WESTON-MOTT CO. **WIRE WHEELS**

For Cushion, for Pneumatic, for Solid Tires
**FOR EVERY TYPE OF HORSE-DRAWN OR
MOTOR-DRIVEN VEHICLE**



Every part of every one of our Wire Wheels is carefully inspected and tested.

The Hubs are machine-turned.

The Spokes are all made from high carbon wire drawn from imported billets.

The Rims are made from the stiffest stock ever used in Rims.

The Bearings are tool ground to size.

All this is expensive—but it's necessary.

In our Wheels you simply get the best made

And you get it every time.

Send for Booklet.

UTICA, N. Y.

CONCORD

Axles

D. ARTHUR BROWN, Treas.,
Concord Axle Co.

CHARLES AUSTIN BATES N. Y.

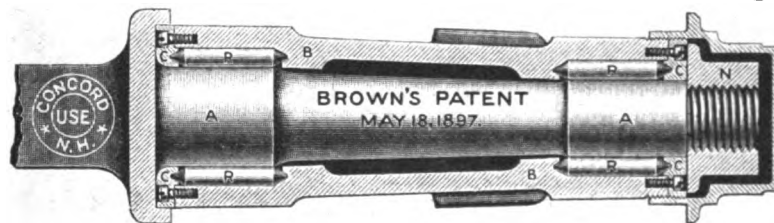
The Original Concord Axle.



Concord Express Axle, with Coach Bed.



Brown's Patent Roller Bearing Axle.



These GENUINE Concord Axles are superior in quality to all others in this line,
and are manufactured only by

CONCORD AXLE CO.,



PENACOOK, N. H.



(Always look for the Trade Mark.)

• THE • BAKER BALL BEARING AXLES

THE MOST NEARLY PERFECT ANTI-FRICTION AXLES IN THE WORLD.



SPEED WAGON OF A. E. PERREN, BUFFALO, N. Y.

OFFICE OF
A. E. PERREN,
CARRIAGE BUILDER.

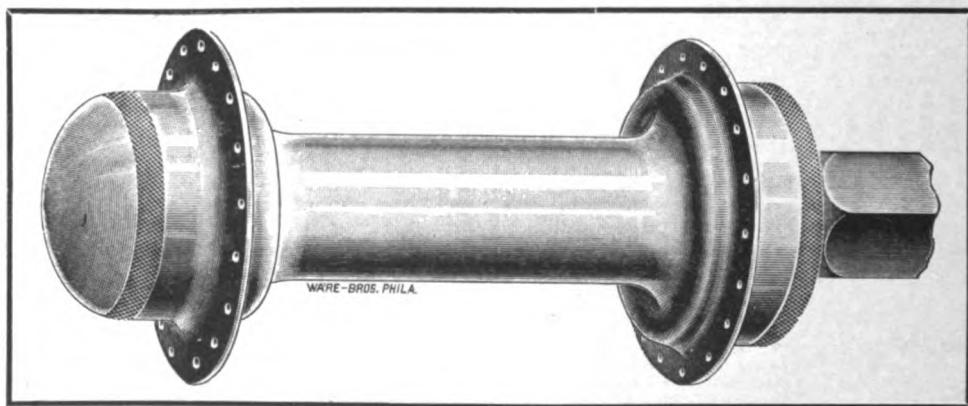
UNITED STATES BALL BEARING CO., NEW YORK CITY.

GENTLEMEN :

I was the first manufacturer in this or any other country to make the low wheel, ball bearing, pneumatic tire wagon. Naturally I was anxious to have a perfect wagon, and with that end in view I tried and tested every ball bearing axle that had any reputation at all, but I find that *yours is the best* in my judgment, as it is easy running, easy of adjustment and easy to clean, and water does not get in when washing the wagon. This axle was on the sixty-five pound wagon to which I gave my horse "True Chimes" a half mile road wagon record at the Empire City track, New York City. He went the half mile in 1:02 $\frac{3}{4}$, the last quarter in 31 seconds. As the axle forms such an important part of a wagon, I consider myself fortunate in being able to buy such a superior one as you turn out.

Yours truly,

A. E. PERREN.



UNITED STATES BALL BEARING CO.

Townsend Building, Broadway and 25th Street,
NEW YORK CITY.

C.H.A.T.

Helps Secure Situations.

**Carriage, Harness and
Accessory Traveling
Salesmen's Association**

OF THE UNITED STATES.

**All Commercial Travelers in Above Lines Eligible.
No Others. Pays Death Benefits.**

Membership Fee, - - \$3.00
Annual Dues, - - - - 1.00

Employers of Traveling Men eligible to join as associate members on payment of \$5.00, and are exempt from all further dues.

Manufacturers of carriages, harness or goods that enter into their construction, jobbers of same, can secure good, reliable and efficient salesmen through our Association, as the members of this Association have the best facilities for knowing all about men who are seeking situations, and none will be recommended unless they are first class and worthy of support.

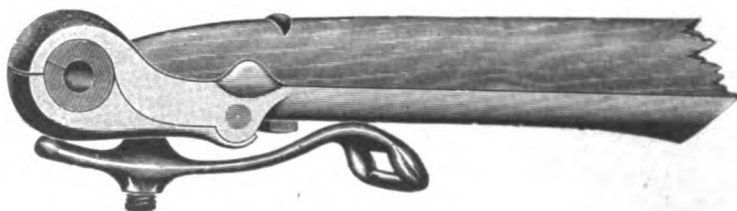
Salesmen in need of a situation, or manufacturers in need of a salesman, address for further information,

P. D. RANDALL, Secretary.

Board of Trade, Springfield, Mass.

Eccles Adjustable Shaft Eye.

PATENTED AUGUST 28th, 1906.



Ball Bearing Shaft Coupling.

SEND FOR DESCRIPTIVE CIRCULARS AND PRICES.



PATENTED OCT 12, 1897.

ALSO GET OUR CATALOG SHOWING FULL LINE OF

Carriage Forgings.

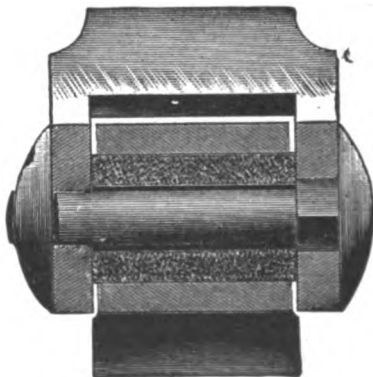
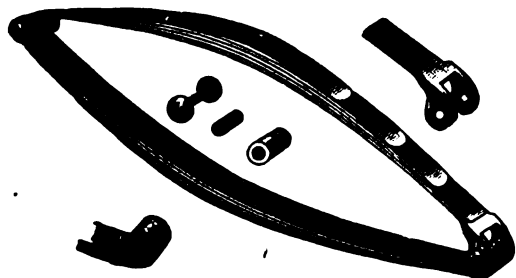
**RICHARD ECCLES,
AUBURN, N. Y.**

Elliptic and Coach Platform Springs

WITH RUBBER OPEN-HEADS.

LARGE SIZE.—Designed for Broughams, Landaus and Coaches.

SMALL SIZE.—Designed for Buggies and Light Carriages.



The Rubber Open-Head

SPRINGS

Work Freely Without Friction.

No Binding or Squeaking in
the Heads or Eyes.

Springs of Every Style and Pattern to order,

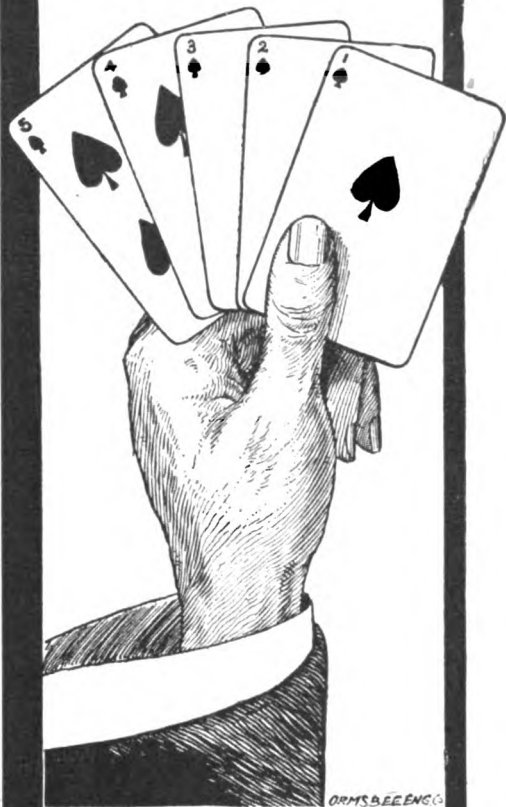
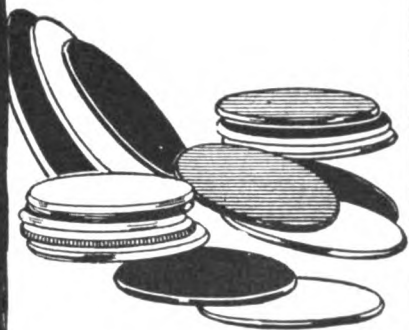
ALSO CURTAIN ROLLERS and CONGEALED HINGES.

Exclusively First-Class Work.—The Best that Can be Made.

SPRING PERCH CO.,

BRIDGEPORT, CONN.

Please mention "The Hub" when you write.



- TWO - GOOD OPENERS

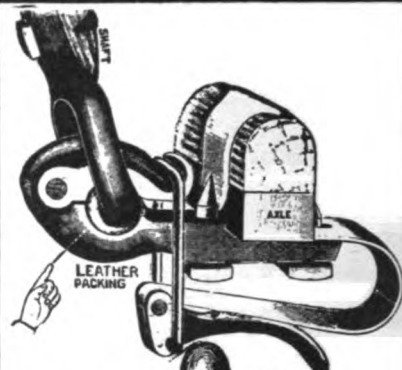
One of these hands will open a **Jack Pot**.

The other **Hand** will open any **Bradley Shaft Coupling**, and is the only tool required.

There is no **Gamble** about this latter operation.

There is an element of **Chance** in a **Jack Pot**.

With the **Bradley Shaft Coupling** you are bound to win, no chance to lose.



A vehicle with **Bradley Couplings** on it is more than half sold.

Fair minded persons will gladly pin their faith to **Bradley Couplings**, which are made of **Steel**—the **King of Metals**.

The Bradley Shaft Couplings are not expensive, quality and advantages considered. Carriage manufacturers will furnish them on the vehicles they build if the dealer insists. Why not insist and thus get the best?

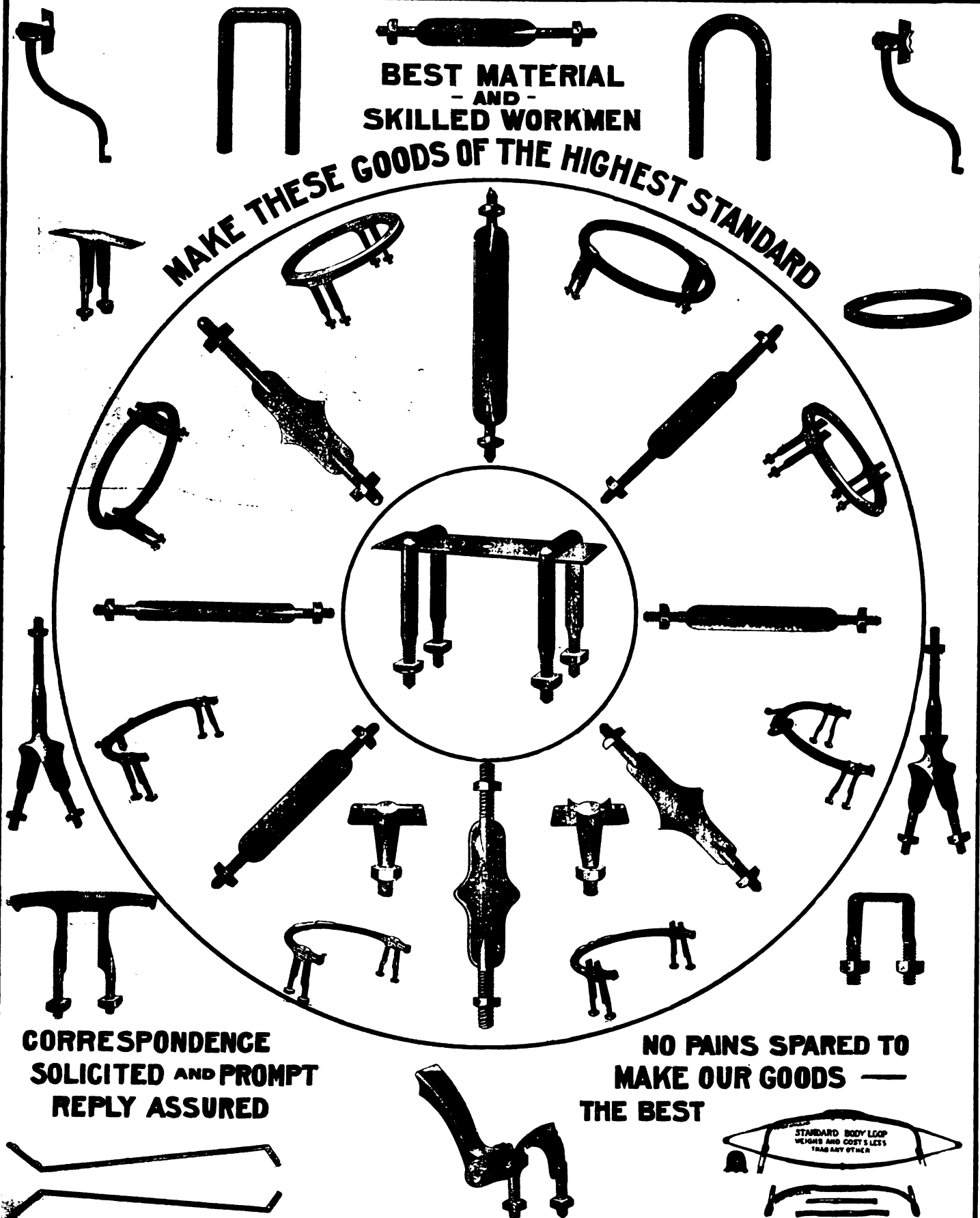


C. C. BRADLEY & SON, Syracuse, N. Y.

ONLY-A-FEW-OF-OUR-MAKE

BEST MATERIAL
- AND -
SKILLED WORKMEN

MAKE THESE GOODS OF THE HIGHEST STANDARD



CORRESPONDENCE
SOLICITED AND PROMPT
REPLY ASSURED

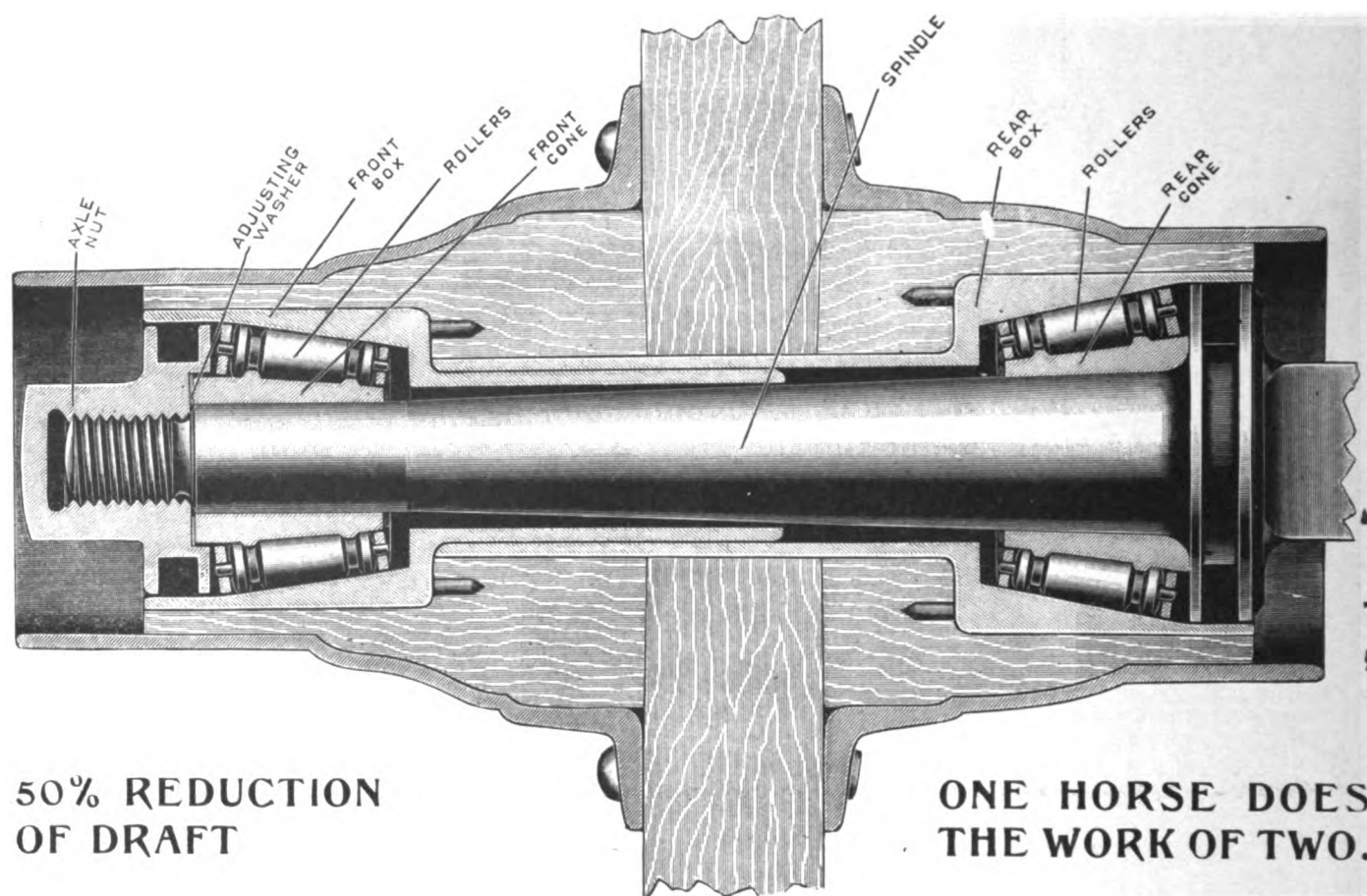
NO PAINS SPARED TO
MAKE OUR GOODS —
THE BEST



CATALOGUE AND PRICES TO BE
HAD FOR THE ASKING

THE KEYSTONE FORGING CO.,
NORTHUMBERLAND, PA, U.S.A.

TIMKEN ROLLER BEARING AXLE



50% REDUCTION
OF DRAFT

ONE HORSE DOES
THE WORK OF TWO.

Patents No. 606,635, June 28th, 1898. No. 606,636, June 28th, 1898.

Knowing that many improperly constructed and untried anti-friction axles have been offered the trade with disastrous results, we say to you that our axle is mechanically perfect and a tried success in every sense of the word, and therefore offer you the following very broad trial warranty on sample axles:

IF, AFTER SIX MONTHS FROM DATE OF SHIPMENT, YOU ARE NOT SATISFIED WITH THE WORKING OF THE TIMKEN ROLLER BEARING AXLES, YOU MAY FREIGHT THEM BACK TO US AND WE WILL REFUND AMOUNT YOU PAID US FOR THEM.

Address All Communications to

TIMKEN ROLLER BEARING AXLE CO.

HENRY TIMKEN, President,

STOCK OF AXLES ALSO CARRIED AT OUR
NEW YORK OFFICE, No. 1769 BROADWAY.

2d and Branch Streets, ST. LOUIS, MO.

BRANCH OFFICES:

BOSTON, 29 Beverly Street.

BROOKLYN, 40 Boerum Place.

PHILADELPHIA, Fulton and Walker Co. (Wagon Builders).

Please mention "The Hub" when you write.

Highest Award
Automobile and Vehicle Bearings
PARIS-1900

... Visit us at the ...
Pan - American Exposition
BUFFALO-1901

Highest Award
National Export Exposition
PHILADELPHIA-1899

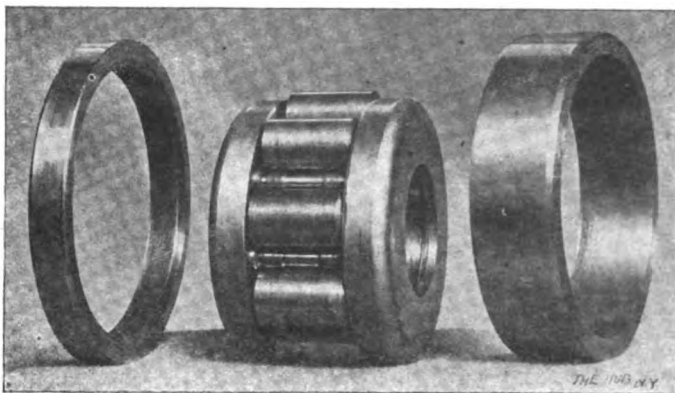
A. R. B.

ROLLER BEARING AXLE

COMBINED JOURNAL AND END THRUST BEARING

THE ONLY BEARING

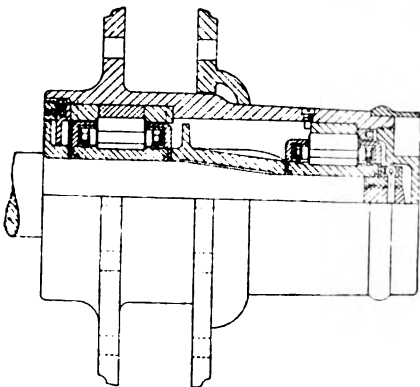
1. That has a purely rolling motion.
2. That will stand the high- or speeds.
3. That does not decrease in efficiency with the increase in load.
4. That has a long guarantee against wear and breakage.



THE ONLY ROLLER BEARING

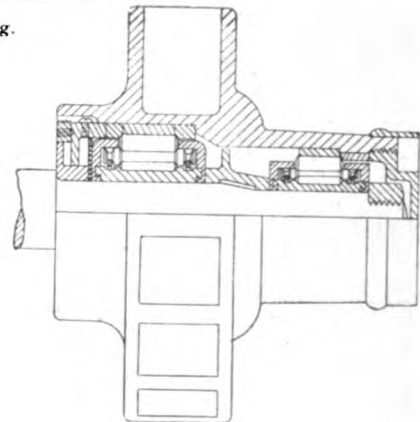
5. That is made entirely of hardened steel.
6. That combines with a great saving of draught great durability.
7. That saves over 99 per cent. of the axle friction.
8. That has no cage to be twisted, broken or worn.

Single Bearing with Outer Race and Bevel Thrust Ring.
Patents Pending



ROLLER BEARING HUBS AND AXLES

For all kinds of Carriages and Automobiles — From Light Runabouts to Heavy Trucks and Drays. ∴ ∴



WHEELS COMPLETE WITH ROLLER BEARING HUBS BUILT TO ORDER. ALSO SINGLE BEARINGS FOR AUTOMOBILE DRIVING AXLES, SHAFTING, SHEAVES, SPINDLES, MOTORS, CAR BEARINGS, MACHINERY, ETC.

NOTE THIS GUARANTEE

WE GIVE A YEAR'S GUARANTEE ON EVERY BEARING MANUFACTURED BY US, COVERING DEFECTS OF BREAKAGE OR WEAR. ∴ ∴ ∴ ∴

AMERICAN ROLLER
BEARING COMPANY

OFFICES AND FACTORY
32-40 Binford Street
BOSTON, MASS.



EUROPEAN BRANCH

AMERICAN ROLLER
BEARING COMPANY
(LIMITED)

17 Soho Square
LONDON, ENGLAND

Bailey Pivot Springs

Are not on the market except on our own finished WHALEBONE ROADWAGONS and pneumatic carriage gears.

The time has now come when we shall license spring manufactures for the fall trade, and we warn carriage dealers, that they may not be cheated into buying springs similar in appearance, but absolutely weak in those vital parts where the BAILEY PIVOT SPRING has demonstrated its superiority over all other springs.

Men who try to make capital out of other men's good reputations are in an unenviable position. So are their dupes. Be sure you are getting the

Bailey Pivot Spring

S. R. Bailey & Co. (^{Established} 1856) Amesbury, Mass.



ROLLED STEEL SPRING BARS

EVERY progressive carriage builder will appreciate CLEVELAND ROLLED STEEL SPRING BARS. They are neater and better than wood, and are the strongest Spring Bars made.

Heretofore, whenever carriage builders wanted anything whatever in the way of forged Spring Bars, they had to resort to the expensive luxury of hammering them out by hand. This put the price away up in the clouds and placed them out of reach except for the highest priced work.

Rolled Steel Spring Bars have put a different face on the matter; they have the strength and good points of hand-forged and cost only about one tenth as much. You can buy them as cheap as cast Spring Bars and nearly as cheap as wood. This brings them within reach of every carriage builder and permits their use on vehicles of any price.

If you want to kill two birds at one throw by putting into your carriage a feature that will appeal to every buyer and at the same time keeping the cost down to where it belongs, you can afford to use nothing but Rolled Steel Spring Bars.

They have the strength of Hercules, are lasting and economical.

Write us to-day about them and get posted.

**CLEVELAND HARDWARE CO.,
CLEVELAND, O.**

CHARLES AUSTIN BATES N.Y.

The McGOVERN COLD TIRE SETTING MACHINE

HAND AND POWER MACHINES

TO SUPPLY THE DEMANDS OF THE
CARRIAGE AND WHEEL TRADE, AND ALSO THE BLACK-
SMITH AND GENERAL REPAIRER.

A power machine with an automatic attachment, and where the operator has absolute control of the machine; can stop or start it instantly at any point in its operation.

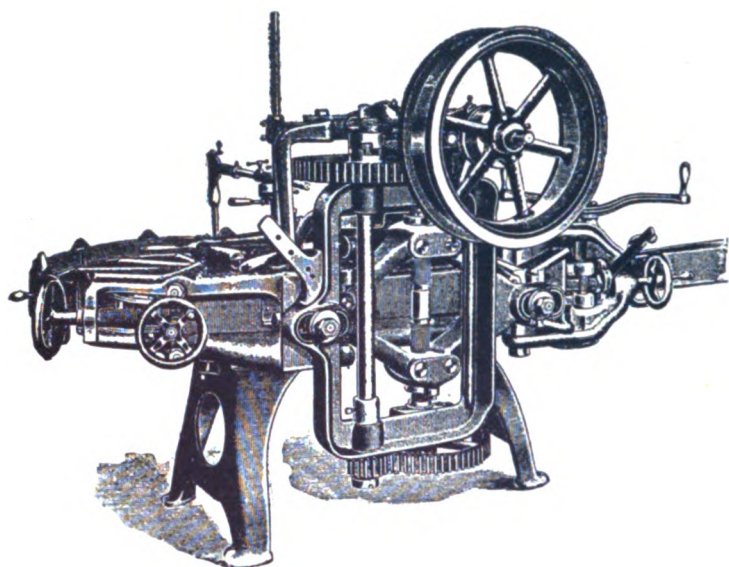
Simple in construction. Powerful in operation. Reasonable in price. Does its work thoroughly, accurately and rapidly, giving proper and uniform dish to wheels.

THE NEW MODEL McGOVERN COLD TIRE SETTING MACHINE

with its increased capacity, simplicity and strength, all three points being more than tripled in this new machine, we guarantee to set Tires ranging from $\frac{1}{4}$ inch to $2\frac{1}{2}$ inch \times $\frac{1}{2}$ inch. Our daily capacity from 800 to 1,000 wheels.

We shall be at the Pan American Exposition in Buffalo. Our machine will be in operation at the factory of the Buffalo Spring & Gear Co., three minutes walk from the grounds.

**The Tire Setting Machine Co.,
LIME ROCK, CONN.**



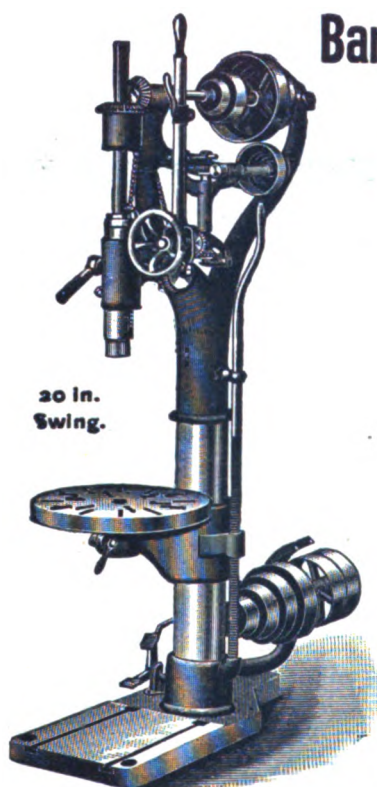
Barnes' Upright Drills,

8 in. to 42 in. Swing.

Single, Multiple, "Series," Power Feed, Automatic Stop, Lever Feed. Back Geared, Sliding Head, Stationary Head, Worm Feed, Lever Feed.

Send for Catalogue.

**W. F. & Jno. Barnes Co.,
588 Ruby St., Rockford, Ill.**



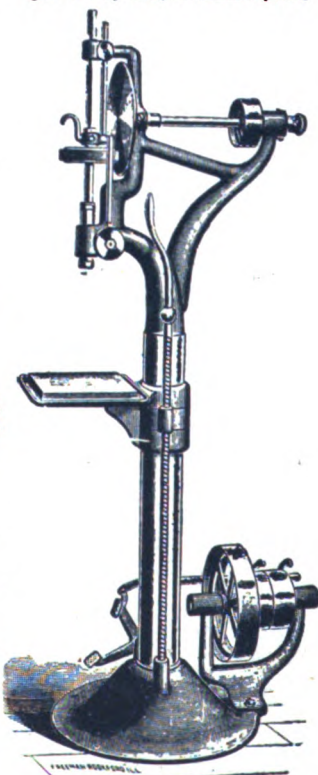
20 in.
Swing.

BARNES' New Friction Disk Drill. FOR LIGHT WORK.

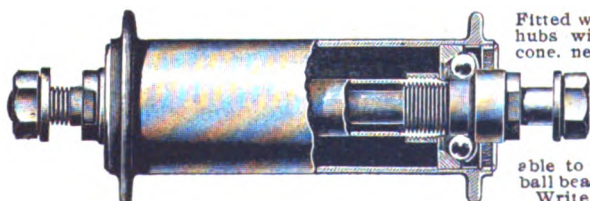
Has these Great Advantages:

The speed can be instantly changed from 0 to 1600 without stopping or shifting belts. Power applied can be graduated to drive, with equal safety, the smallest or largest drills within its range—a wonderful economy in time and great saving in drill breakage. Send for catalogue.

**W. F. & Jno. Barnes Co.,
588 Ruby St., Rockford, Ill.**



WESTON WHEELS.



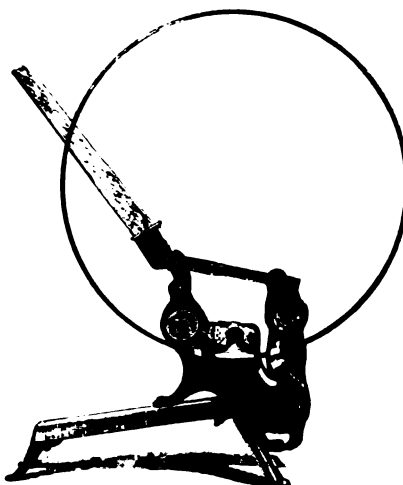
Fitted with Champion hubs with two-point cone, new cone locking device and bolt pattern knock-out axle give the best results obtainable to the users of ball bearing vehicles. Write us fully regarding your requirements.

I. A. WESTON CO.,

Brown & Decker Streets,
SYRACUSE, N. Y.

Please mention "The Hub" when you write.

THE IDEAL TIRE UPSETTER.



The advantages of the Ideal are:

The tire cannot kink.
One man can operate it.
One movement does the work.

It will shrink light Buggy tire.

It will shrink Heavy Wagon tire.

It will shrink Truck tire.

It will shrink perfectly all kinds and thicknesses of tire.

It is the easiest handled.

It is the most durable.

It is the latest and best.

Send for Circular and Price.

Manufactured only by

WEYBURN & BRIGGS CO, 718 Main St., Rockford, Ill, U.S.A.



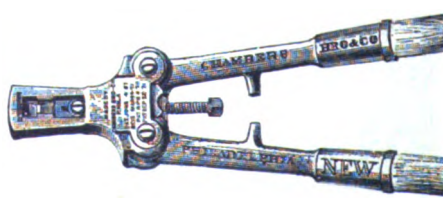
CLIMAX WELDING COMPOUND.

It Welds Steel Tires, Axles and Springs as Easily as Iron.

HARDWARE DEALERS SELL IT.

SAMPLES SENT ON RECEIPT OF 10c IN STAMPS.

**CORTLAND WELDING COMPOUND CO.,
CORTLAND, N. Y.**



BOLT AND RIVET CLIPPERS

Chambers Brothers Co.

52d Street, below Lancaster
Avenue,
Philadelphia, Pa.

FERRACUTE MACHINE CO.

Bridgeton, New Jersey,

U. S. A.

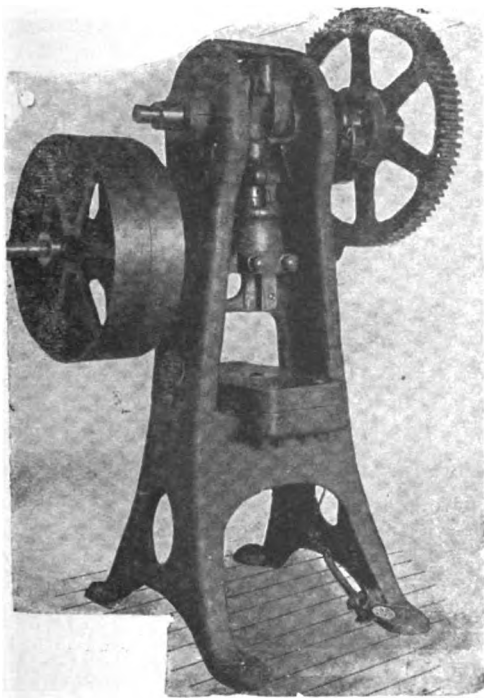
**Presses,
DIES**

AND OTHER

**Sheet Metal
Machinery**

Especially
Adapted for

**AUTOMOBILE
WORK.**



Long Stroke Deepening Press D G 74.

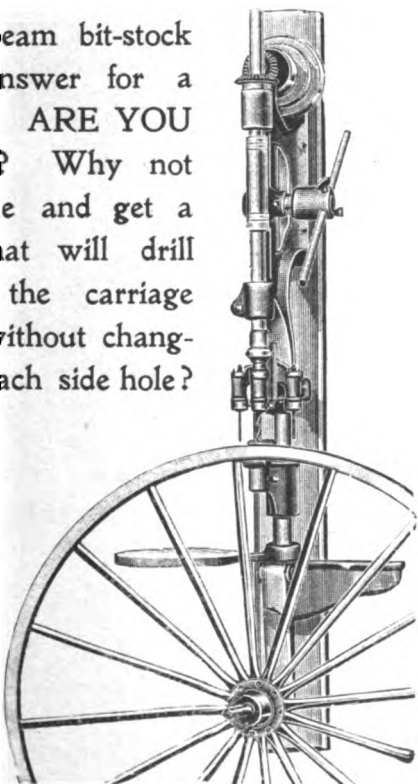
Send for Catalogue describing 300 sizes of Presses, &c.

See article describing Punching Press P 4 in Reading Columns.

THERE WAS A TIME

when an old beam bit-stock drill would answer for a carriage shop. ARE YOU still using one? Why not be up to date and get a turret drill that will drill any hole on the carriage quickly, and without changing drills for each side hole?

ESPECIALLY
ADAPTED
FOR TIRES.



The George Burnham Co.,

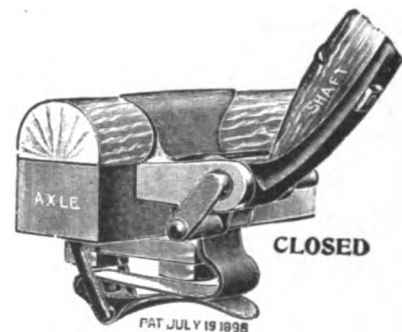
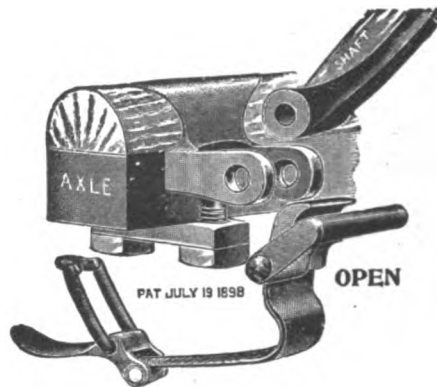
21 Hermon Street, WORCESTER, MASS.

IDEAL

Quick Shifter

... and ...

Anti-Rattler.



The "Ideal" never fails. It is the most complete Anti-rattler and Quick Shifter on the market. Fits any wagon, new or old, without the use of mechanic or tools. Can change from pole to shafts in less time than it takes to tell it. Hand forged steel bolt, HEAVY BEARINGS, NO RUBBER OR LEATHER to get out of order. Oneida Community trap steel spring. A postal card will bring you price list and testimonials. The "Ideal" is extremely popular—it helps sell carriages.

Ideal Mfg. Co.,

ONEIDA, N. Y., U. S. A.

Premier Mfg. Co.

+

STEEL RIMS.

When steel rims were first made for pneumatic tires the edges were flared "to prevent cutting," but it was soon demonstrated that if the tires were overloaded they would chafe, break the fabric and go to pieces quicker than when they rode the rim. It was also demonstrated that the flare and projection of the rim would permit water and dirt to enter and unseat the tire, besides the edges of the rim would strike objects in the road, wear off the paint and transmit a shock to the vehicle, exactly what the pneumatic tire is intended to prevent.

Some tire manufacturers, in competing for business, have reduced the side of the outer cover of the tire to less than half the thickness of the tread, and consequently, when the tire comes in contact with the rim, being weakest at that point, will give way first, whether the rim is flared or not. When it is brought to their attention they place the blame on the rim, when the fault is due to the construction or application of the tires.

Rims should not project beyond the tire and should hug it closely, so that the paint is never marred.

Remember this: The tire is made to protect the vehicle, the same as it does the bicycle, and no shock should ever be transmitted to the vehicle through the rim. If your tires are cut by the rim it is because the tire is too small in cross section for the load it has to carry.

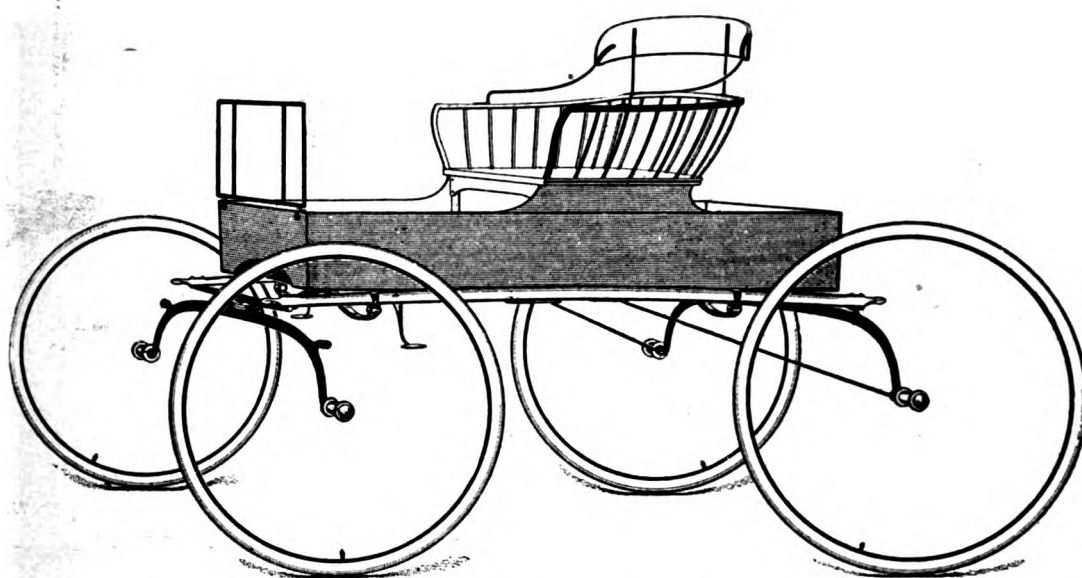
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Premier Manufacturing Co.,

HARTFORD, CONN.

Please mention "The Hub" when you write.

Premier Mfg. Co.



THE above cut illustrates our Premier Tubular Gear No. 50 (with body ironed). This job has been much admired at all the recent shows and has been steadily growing in popularity with builders of high-grade work to fill a demand for a light road wagon and one to which a trotter may be safely speeded, even in the size intended for two passengers. We make it for 17 x 52 inch and 22 x 54 inch bodies, and the heaviest one weighs less than 150 pounds. Its carrying capacity equals the ordinary two-passenger pneumatic wagon, which weighs about 275 pounds. We can furnish with or without body. Let us send you one on approval, as every one of your dealers has a place on his floor for a job of this kind. For prices, etc., see our new catalogue, just issued.



PREMIER MANUFACTURING CO.,

HARTFORD, CONNECTICUT.

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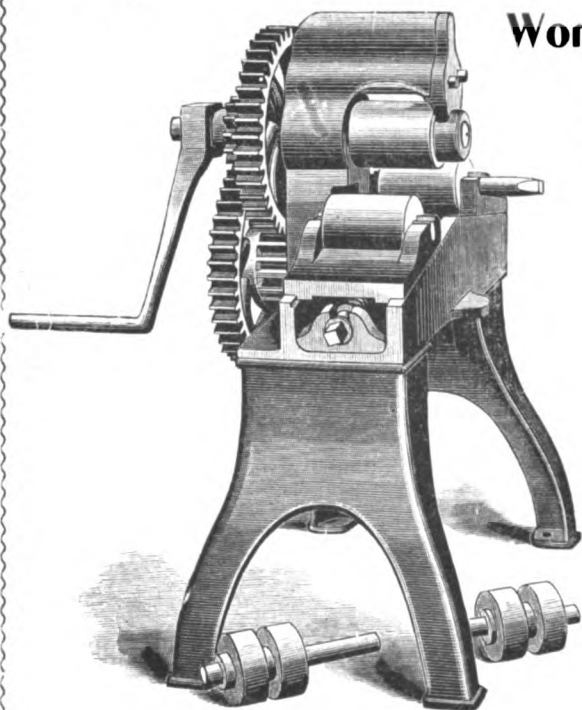
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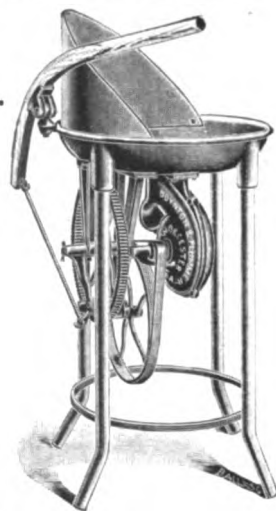
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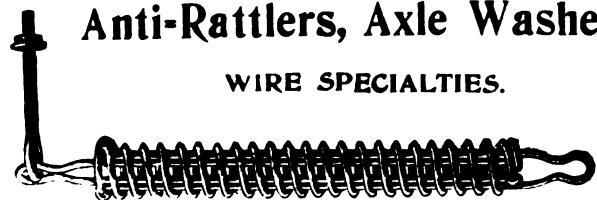
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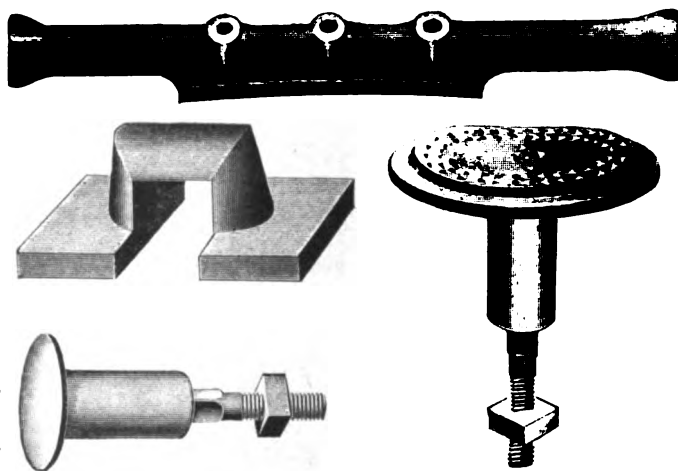
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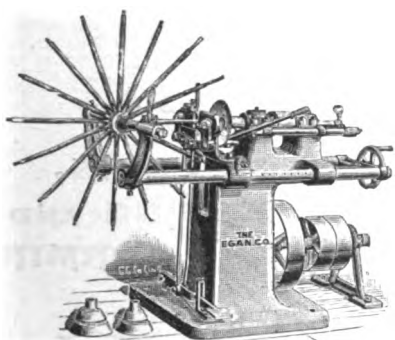


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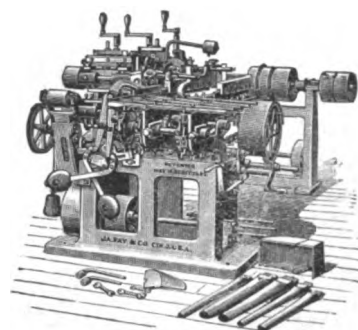
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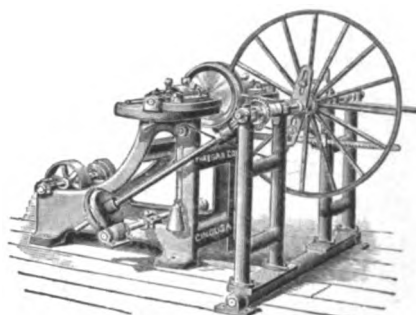
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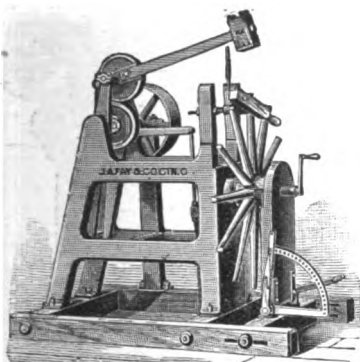
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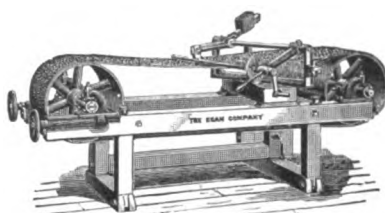
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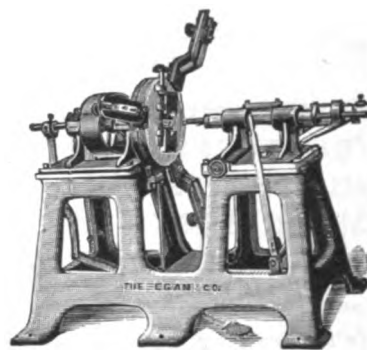
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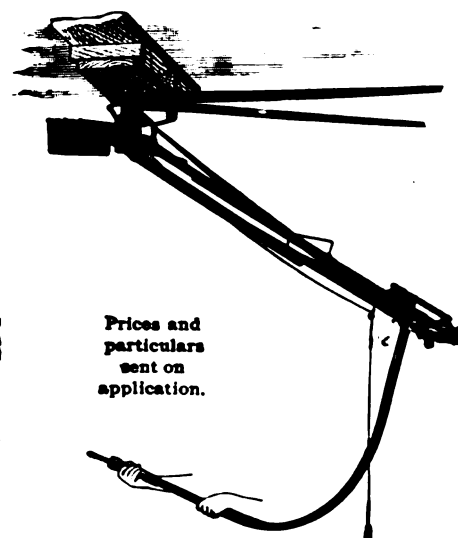
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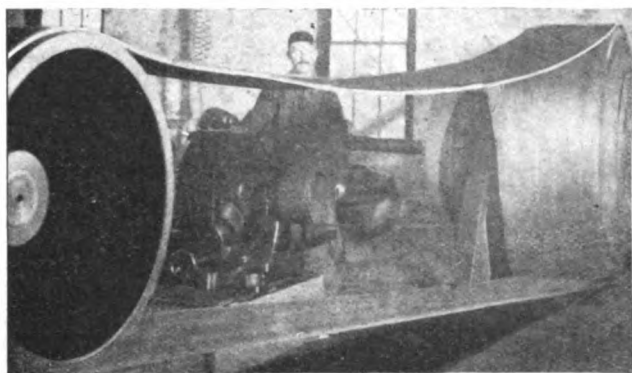
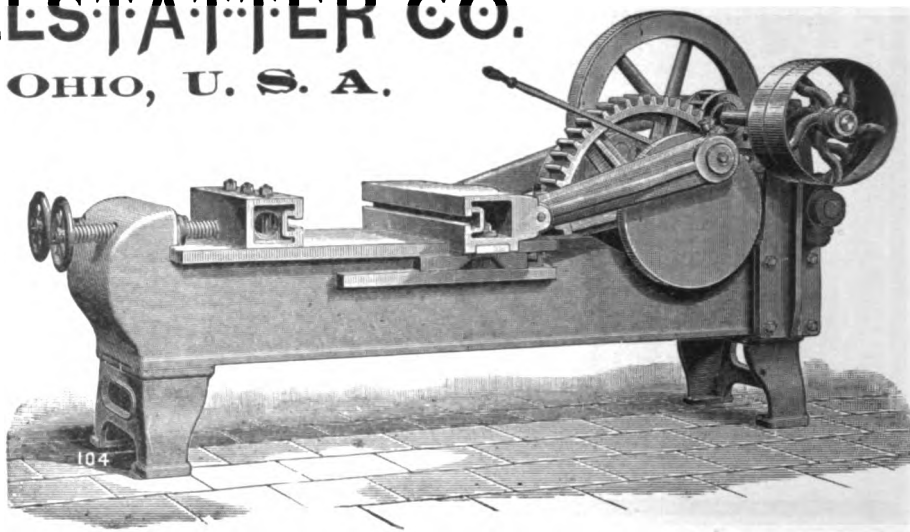
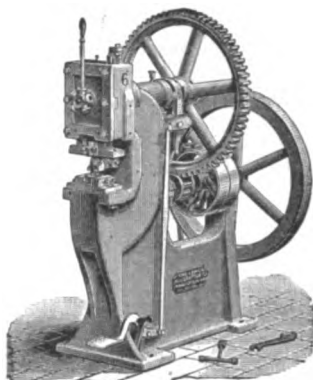
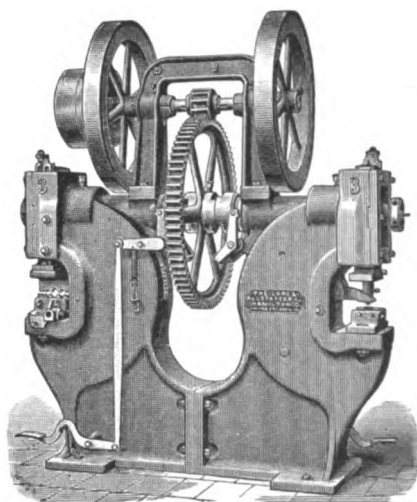
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As the belts cannot slip they can run easy—never beating bearings, never running off, needing almost no taking-up or attention. Power greatly increased.

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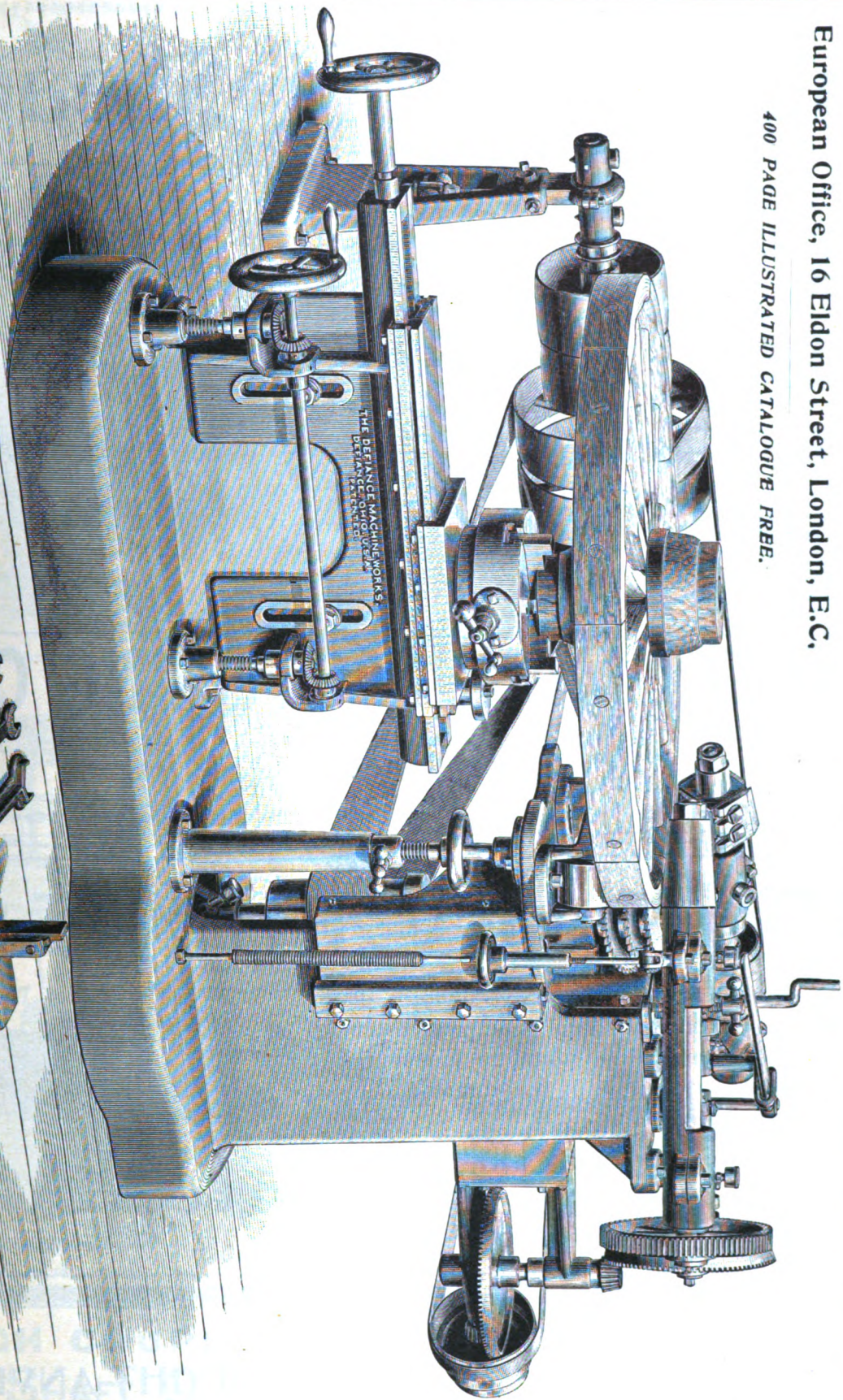
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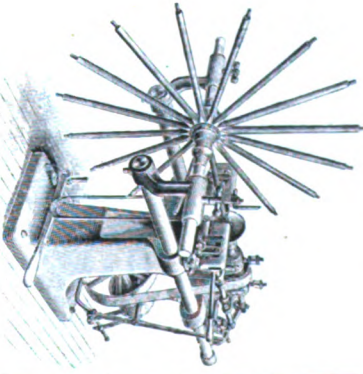
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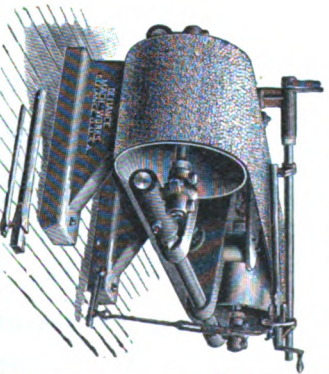
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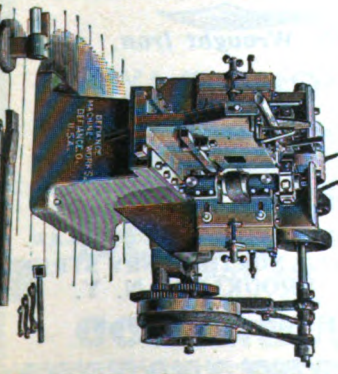
No. 1 Automatic Wheel Rim Finishing Machine.



No. 1 Patent Wheel Tenoner



No. 4 Iron Frame Sand Belt

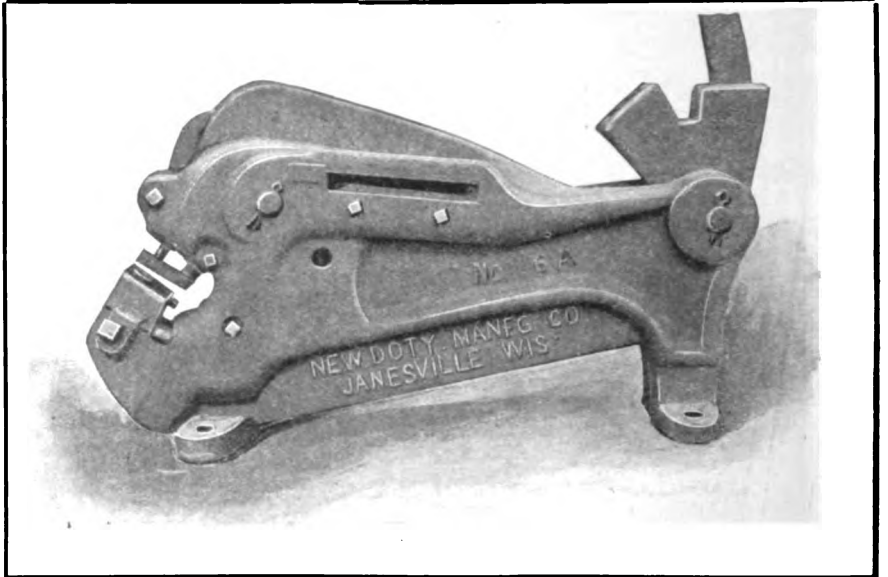


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THE accompanying illustration is a cut of the New Doty Manufacturing Co.'s combined punch and shears, especially designed for the use of wagon and carriage makers and blacksmiths. It will punch a $\frac{1}{2}$ in. hole in $\frac{1}{2}$ in. iron, or a $\frac{1}{4}$ in. hole in $\frac{3}{8}$ in. iron, or cut $2\frac{1}{2}$ in. x $\frac{1}{2}$ in. or 6 in. x $\frac{1}{4}$ in. flat bar iron, or $\frac{1}{4}$ in. round iron or their equivalents. The knives for flat and round iron are independent of each other and of the punch, and both sets of knives, as well as punch, are at all times ready for use without any change. The machines are strong and powerful, and guaranteed to do the work as listed. The company will send with each machine all of the necessary knives for cutting flat and round iron, also necessary levers and one each $\frac{1}{2}$ in. $\frac{3}{4}$ in., and $\frac{1}{4}$ in. round punch and die. Each machine is tested in their shops, and when shipped is complete and ready for use. Weight, 300 pounds. Price, \$45.00.



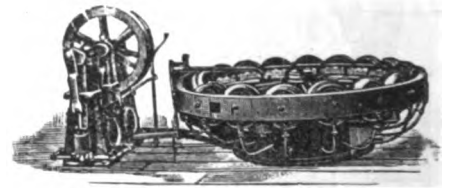
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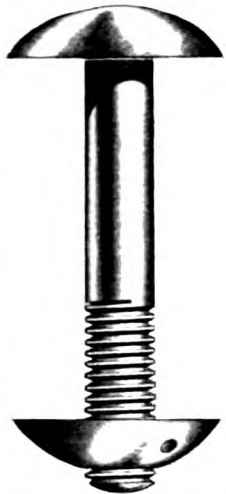
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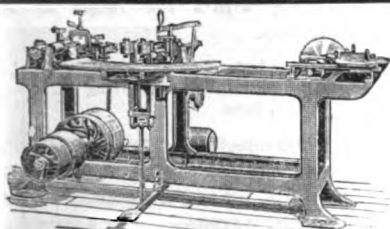


BOLTS AND NUTS

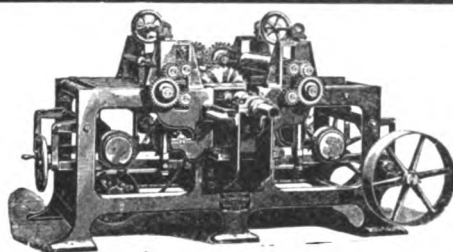
OF EVERY DESCRIPTION.

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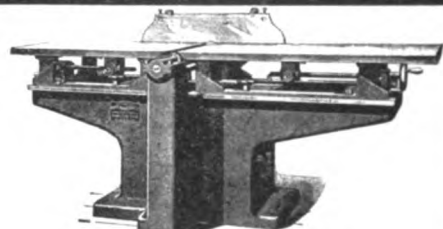
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N. Y.**



Felly Cut-Off, Boring & Dowelling Machine.



Power-Feed Double Edging Saw No. 339.



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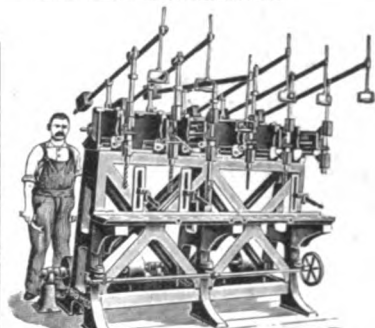
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DESIGNERS AND BUILDERS.

Improved Wheel, Wagon and Carriage Machinery, Hub, Spoke and Rim Machines.

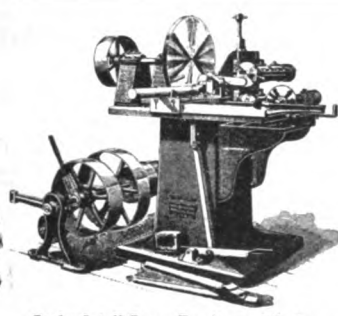
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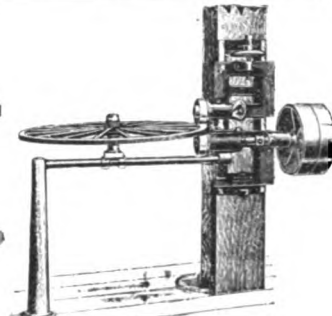
Vertical Six Spindle Gang Boring Machine.



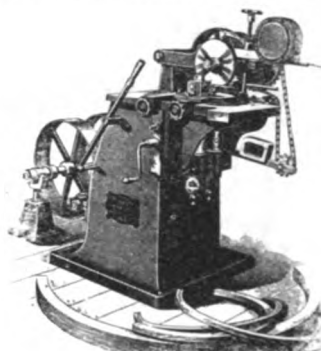
Heavy Two-Side Rim Planer No. 384



Spoke Cutoff Tenon Trueing and Facing Machine No. 257.



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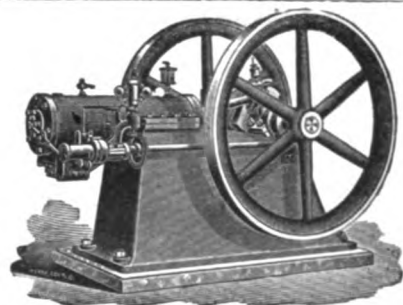


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WAGON MAKERS AND
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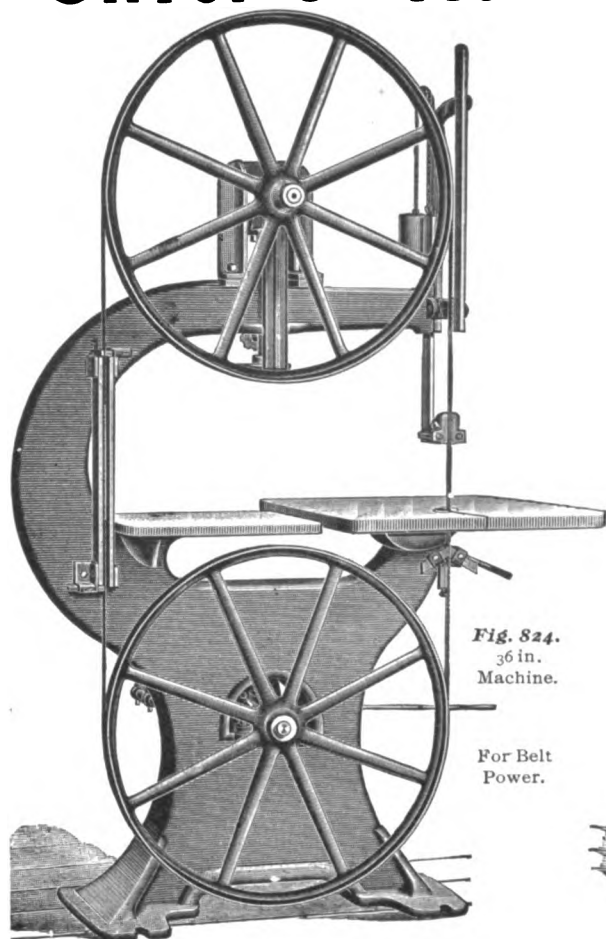


Fig. 824.
36 in.
Machine.

For Belt
Power.

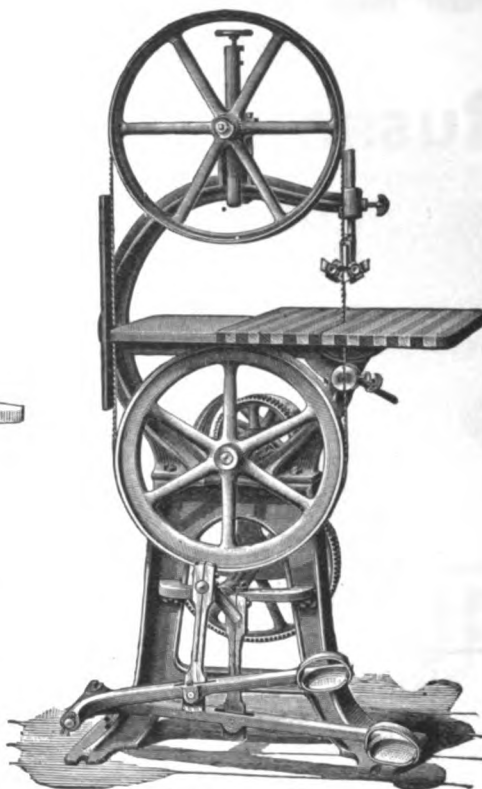


Fig. 721.
20 in. Machine. Combined Foot or Belt Power.

IN SIZES:

20 in. machine for foot or belt power.
26 in. machine for foot or belt power.
32 in. machine for belt power.
36 in. machine for belt power.

LIST PRICES,

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EVERY MACHINE GUARANTEED.

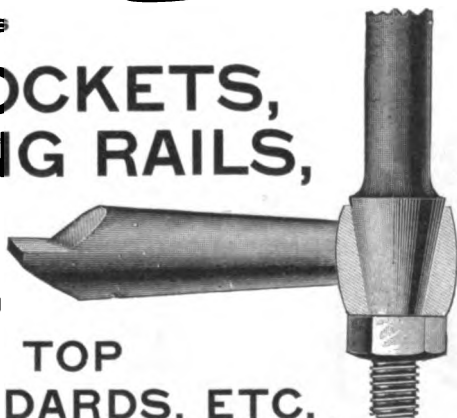
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Standard Drill and Countersink Combined.

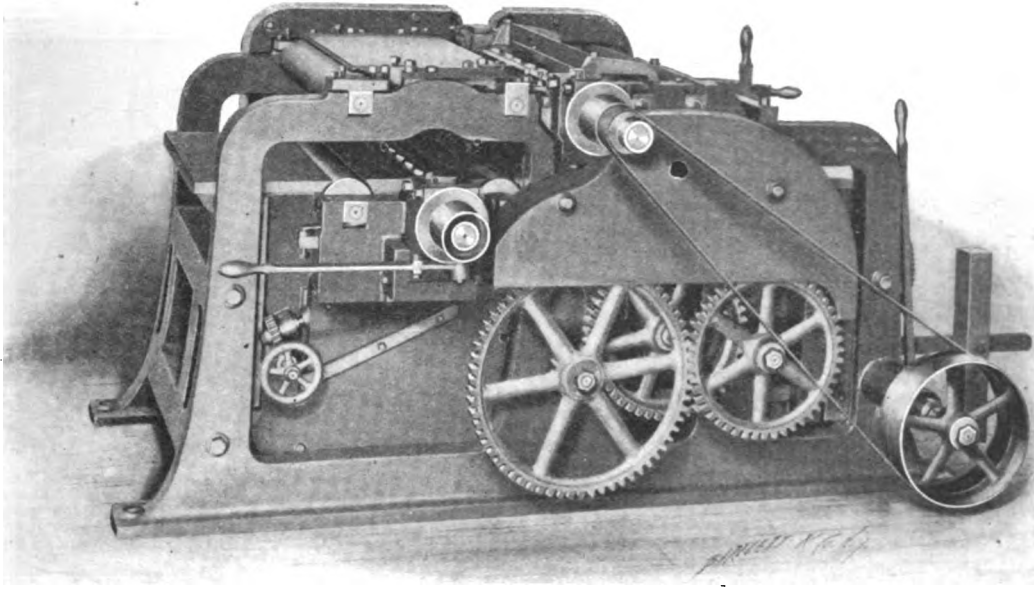


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New York.**

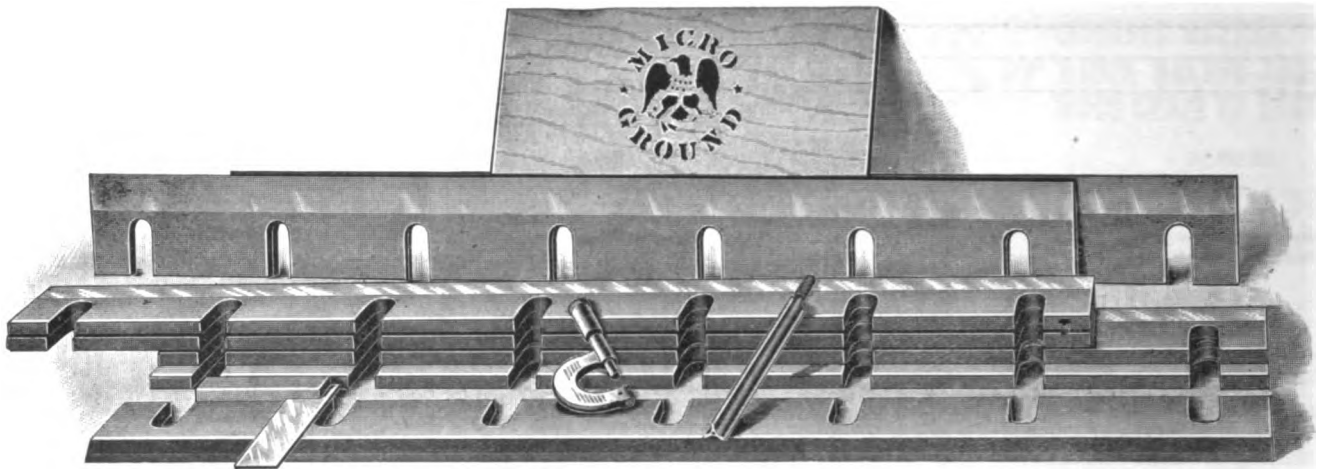


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IF you have had a discouraging experience with a DOUBLE SURFACE PLANER, please do not labor under the impression that there is no satisfactory Double Surfacer built. THE WHITNEY will plane both sides of a board in just as nice shape and just as quickly as the Whitney Single Surfacer will plane one side. You can save one half the expense of your planing as well as floor space in your factory. WHITNEY PLANERS are the HIGHEST TYPE OF CYLINDER PLANERS. They will do work which no other Planers can do. This matter we shall be glad to explain to you by correspondence.

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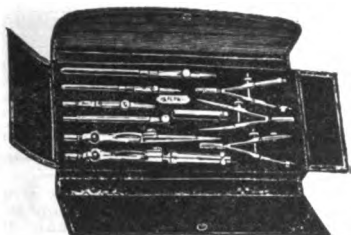
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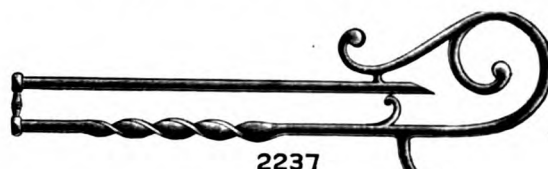
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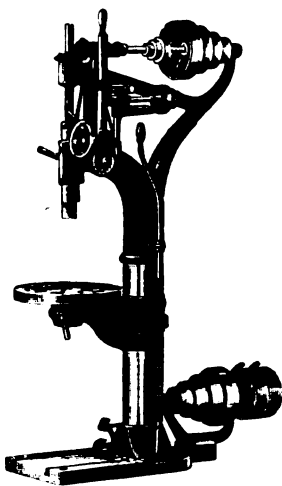
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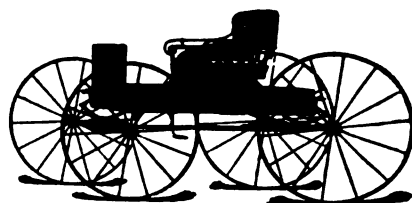
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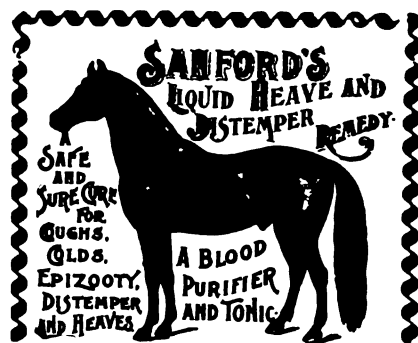
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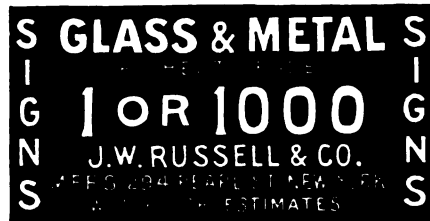
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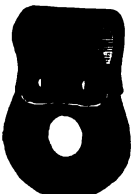
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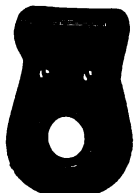
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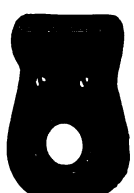
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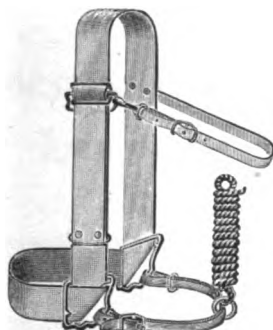
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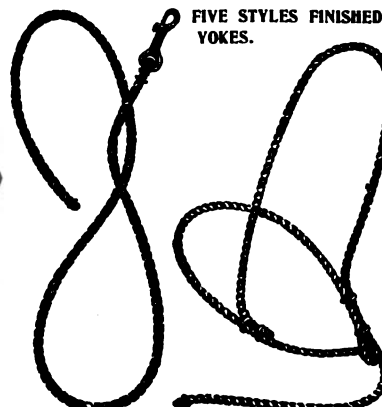
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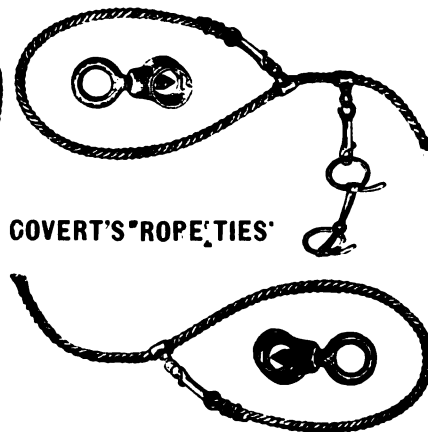
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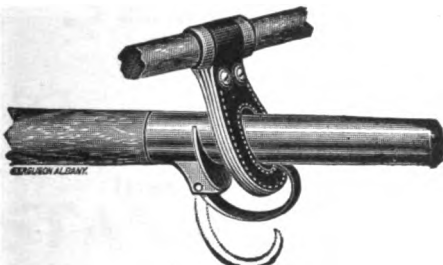


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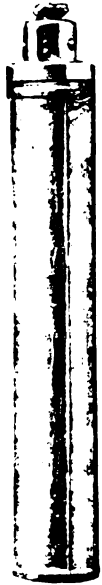
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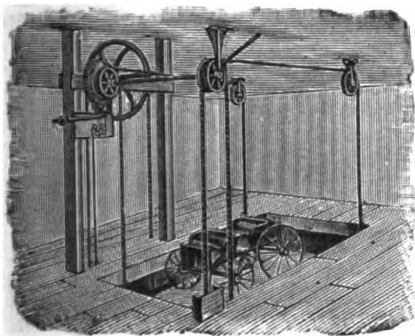
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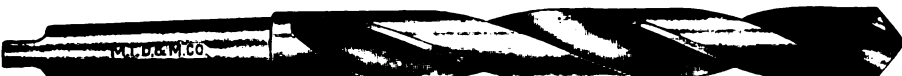
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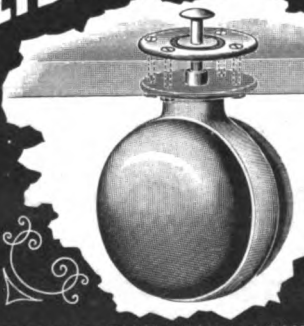
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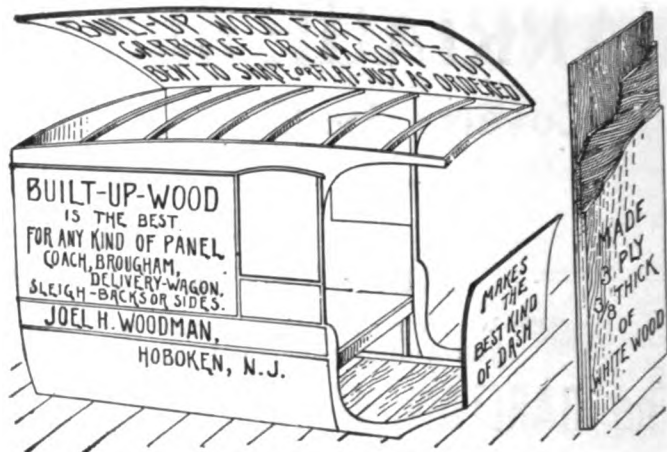
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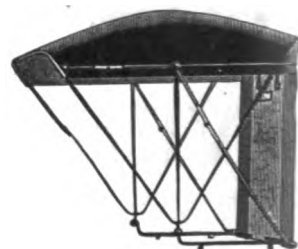
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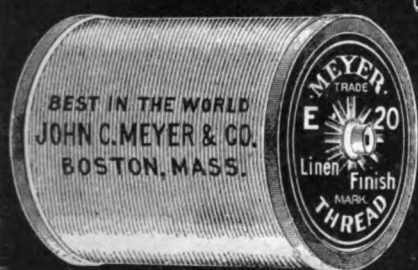
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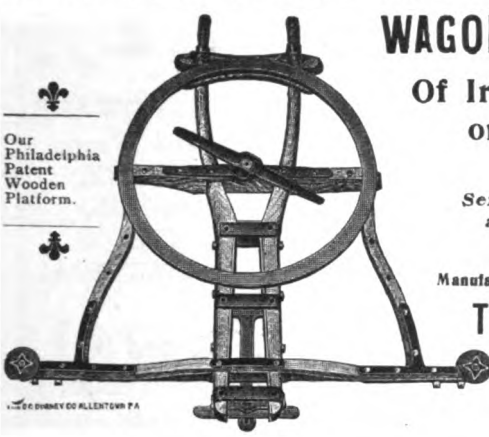
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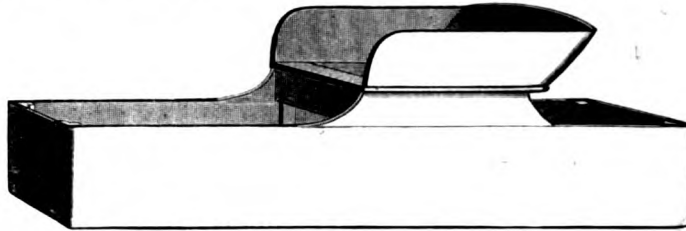
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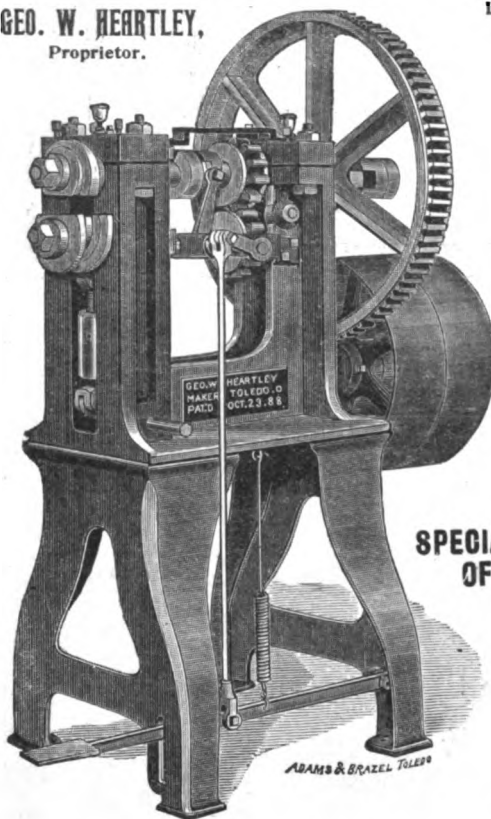
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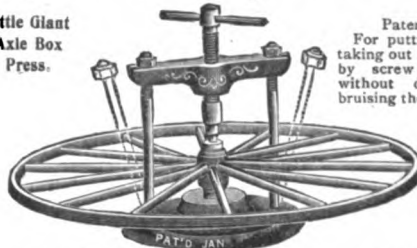
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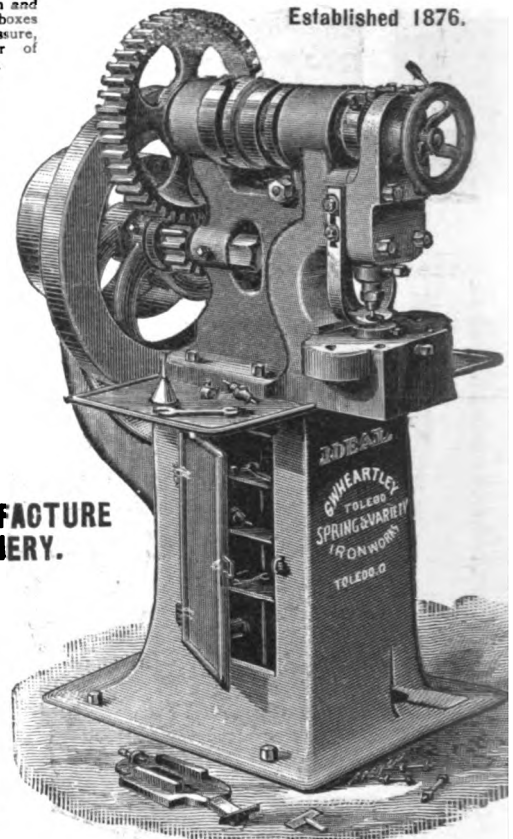
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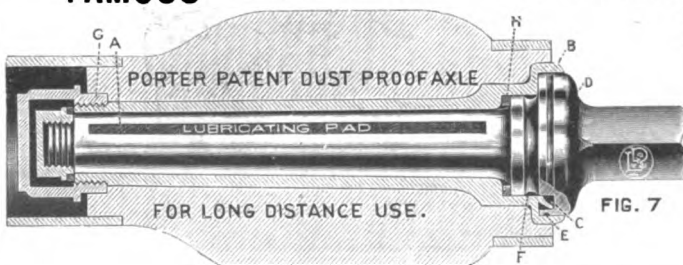
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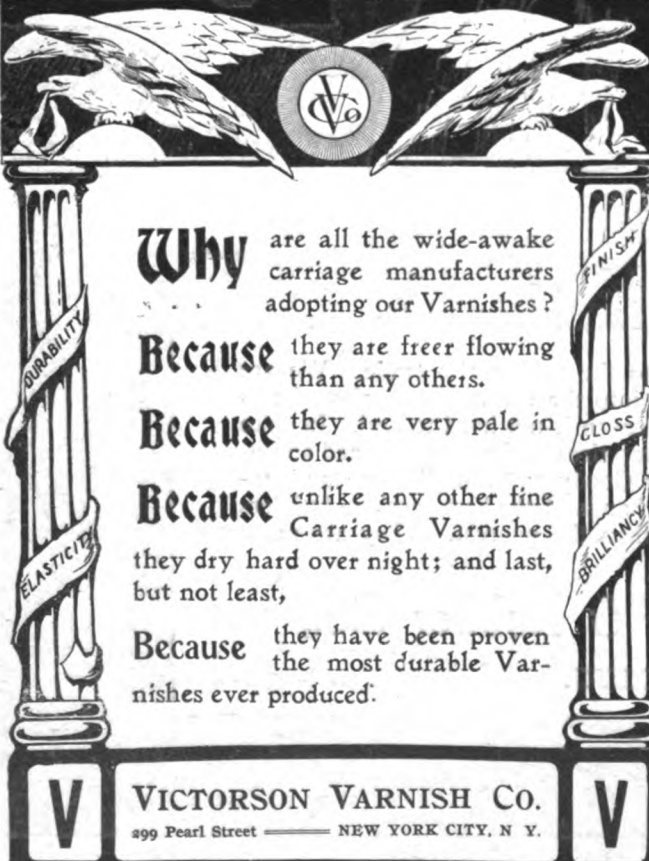
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**ES 1827 & CO**

With a reputation won by 74 years of *HIGH GRADE* **Varnish** Making to sustain; We cannot afford to put out a single gallon of inferior varnish. **EDWARD SMITH VARNISH MAKERS** **COLOR GRINDERS** **AND COMPANY.**  
 45 Broadway: New York

**For SUPERFINE CARRIAGE VARNISHES**  
**HILDRETH VARNISH CO., 32 Broadway, N. Y.**



# *The Hub*

DEVOTED TO THE DOMESTIC AND FOREIGN INTERESTS OF CARRIAGE, WAGON AND AUTOMOBILE  
MANUFACTURERS AND DEALERS, AND THE ACCESSORY TRADES.



Vol. XLIII.

JUNE, 1901.

No. 3.

TRADE NEWS PUBLISHING CO.

PUBLISHERS

24 & 26 MURRAY ST., NEW YORK



# F. W. DEVOE & C. T. RAYNOLDS CO.,

101 and 103 FULTON ST., - - NEW YORK,

MANUFACTURERS OF

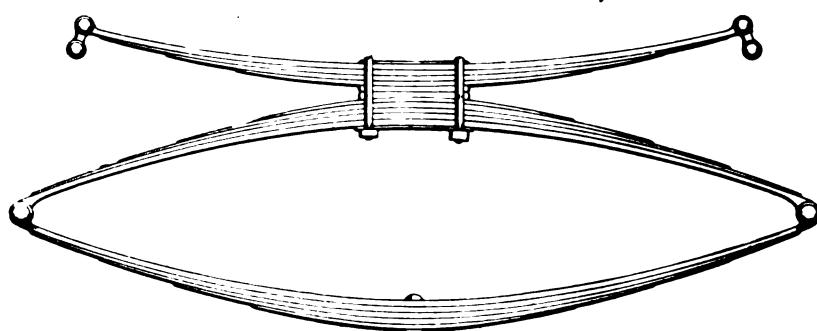
F. W. DEVOE & CO.'S { *COACH COLORS,  
VARNISHES,  
BRUSHES,  
SPECIALTIES.*

C. T. RAYNOLDS & CO.'S { *COACH COLORS,  
VARNISHES,  
BRUSHES,  
SPECIALTIES.*

For Painters, Artists and Decorators.

All the brands and specialties of F. W. DEVOE & Co. and C. T. RAYNOLDS & Co. will be maintained separately as heretofore.

## WILLIAM & HARVEY ROWLAND, Incorporated PHILADELPHIA, PA.



MANUFACTURERS OF

**Carriage and Wagon Springs of Every Description**

DURABLE.

RELIABLE

**WM. HARLAND & SON,**

MERTON, SURREY, ENGLAND

English Varnishes



AND Coach Colors

—BRANCHES:—

4 GOLD STREET, NEW YORK.

Paris, France, and Milan, Italy.

BRILLIANT.

ECONOMICAL

**C.A. WILLEY'S CARRIAGE PAINTS.**

SEND FOR DESCRIPTIVE LIST

C.A. WILLEY, HUNTERS' POINT, NEW YORK, N.Y.

H. R. PARROTT, Pres't.

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**The Parrott Varnish Company,**

MANUFACTURERS OF

**Fine Coach and Car Varnishes**

BRIDGEPORT, CONN.





**THE SHERWIN-WILLIAMS PERFECT METHOD OF CARRIAGE PAINTING**

What points do you consider most essential in your carriage painting?

Is *Durability* one of them? Perfect Method can give it to you with absolute certainty on every job.

Is *Economy* one of them? Perfect Method can give it to you by increasing the output of your paint shop *without any increased expense.*

Is *Beauty* one of them. Perfect Method can give it to you with greater uniformity and less uncertainty than any other system can.

Is *Rapidity* one of them? Perfect Method can give it to you without any risk of the work cracking, peeling or scaling. It's the quickest *safe* system known. You can rush work with it and not sacrifice any of the durability or beauty of the job.

Let us tell in greater detail about the advantages of *Perfect Method*. Send for the P. M. Booklet or let us make tests for you.

**THE SHERWIN - WILLIAMS Co., PAINT AND COLOR MAKERS.**  
CLEVELAND, CHICAGO, NEW YORK, NEWARK, MONTREAL, BOSTON, TORONTO, SAN FRANCISCO, KANSAS CITY.



**DETROIT** STEEL & SPRING **COMPANY**

DETROIT,

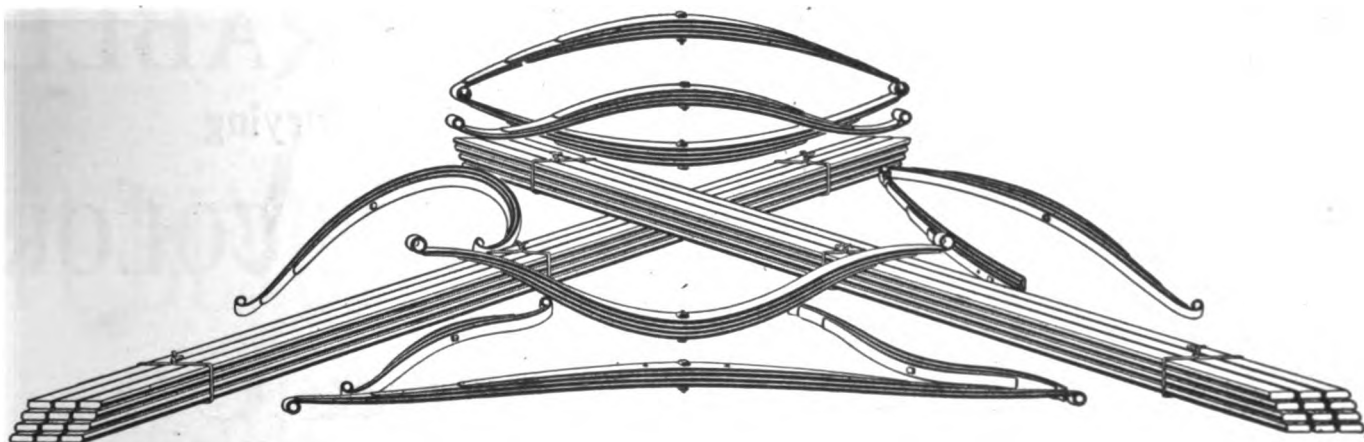
MICH.



— MANUFACTURERS OF —

ALL KINDS  
OF.....

**CARRIAGE AND WAGON SPRINGS**



**Soft Welding and  
Machine Straightened**

**Steel Tire.**

**All Grades and Sizes  
of Spring Steel.**



JOHN W. MASURY & SON

MANUFACTURERS OF

Superfine

Coach Colors

and Varnishes.

NEW YORK and CHICAGO

**Perfection is what we all strive for**

WE CLAIM TO HAVE ATTAINED IT  
IN OUR CARRIAGE VARNISHES.

TRY THEM AND FIND OUT FOR YOURSELF

THEY ARE

**BRILLIANT AND DURABLE**

Remarkably Free Flowing and Quick Drying

**GOOD BODY AND PALE IN COLOR**

WHAT MORE DO YOU WANT?

**EMIL CALMAN & CO.,**

Makers of Fine Carriage Varnishes

299 Pearl Street,

NEW YORK.

Please mention "The Hub" when you write.



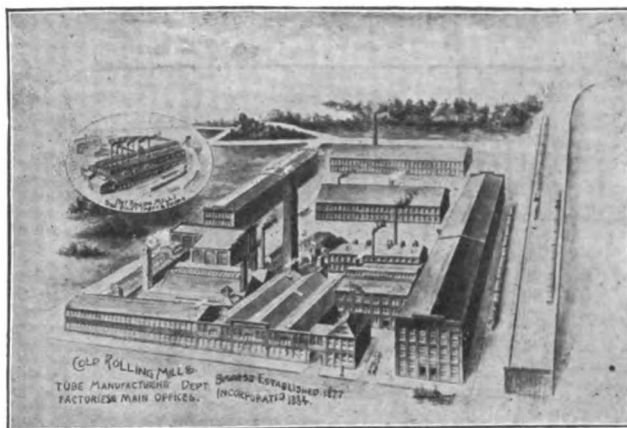
....HANG THIS UP WHERE YOU CAN SEE IT..

The Smaller Picture is our  
HOT ROLLING MILL

The Larger Picture is our  
COLD ROLLING MILL

and

MANUFACTURING  
DEPARTMENTS.



We are completely installed  
to manufacture  
(and have been manufacturers in this line since 1877.)

STEEL

HOT ROLLED ANNEALED AND PICKLED  
BAND AND STRIP in  
Open-hearth, Bessemer and our own  
“SWEDOH.”

COLD ROLLED for all kinds of Pressed,  
Stamped and Drawn Work.

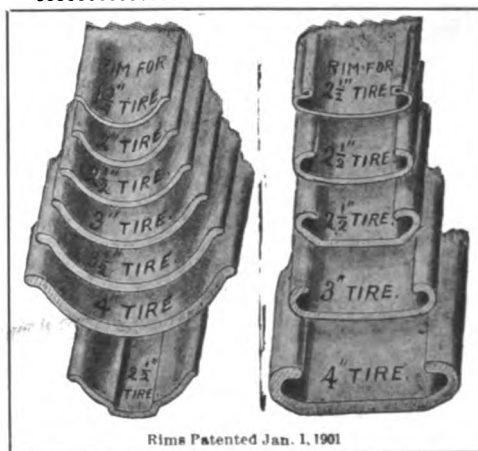
CARRIAGE-SPRING AND Tire Steel  
Special Quality rolled to order.

RIMS

[Rims patented Jan. 1, 1901]

HIGH CARBON  
SPRING STEEL  
like these, and  
of other shapes  
and sizes.

Manufacturers find it unneces-  
sary to finish further before  
enamelling or painting.



TUBING

The Celebrated Brass Lined  
“CLINCHER”  
for Automobiles, Motor Cycles, etc.

THE WILMOT AND HOBBS M’F’G CO.

NEW YORK : 258 BROADWAY,

Main Office and Works, BRIDGEPORT, Conn.



**EXCEL**

ALL OTHERS IN  
Free Flowing,  
Uniformity,  
Safety,  
Lustre,  
and Durability.

**COMPARE**

them with the  
varnishes you  
are now using  
and note the  
results

Send for Samples  
and Price List

**Standard Varnish Works**

The Largest Varnish Works in the World.  
Factories, covering 7 acres, Elm Park, Staten Island, N. Y.

2620 Armour Ave.,  
CHICAGO.

29 Broadway,  
NEW YORK.

23 Billiter St.,  
LONDON.

# Uniformity in Color in Quality

are points of  
excellence possessed by

## THE HARRISON CARRIAGE MAKERS' TINTED WHITE LEADS.

They save time and trouble in  
tinting and make a ground work  
which gives life and durability  
to colors applied on them.

### HARRISON BROS. & Co., Inc.,

White Lead, Colors, Paints, Varnishes  
and Chemicals.

35th & Grays Ferry Road,  
PHILADELPHIA.

27 Lake Street,  
CHICAGO.

117 Fulton Street,  
NEW YORK.

72 Broad Street,  
BOSTON.

**KEYSTONE PRIMER**  
FOR WOOD  AND IRON  
PREPARED EXPRESSLY FOR CARRIAGE WOODWORK

|                         |                             |                             |
|-------------------------|-----------------------------|-----------------------------|
| DRIES<br>HARD & QUICKLY | WILL NOT<br>CRACK OR SCALE. | SURFACES<br>CLOSE AND FINE. |
|-------------------------|-----------------------------|-----------------------------|

GROUND FINE IN BEST RAW LINSEED OIL  
MANUFACTURED BY THE  
**KEYSTONE PAINT & FILLER CO.**  
MUNCY, PA. U.S.A.

**KEYSTONE BLACK FILLER**  
FOR COACH, CAR  AND SAFE FILLING  
THE ONLY BLACK FILLING IN THE WORLD

|                         |              |                             |
|-------------------------|--------------|-----------------------------|
| DRIES<br>HARD & QUICKLY | RUBS EASILY. | SURFACES<br>CLOSE AND FINE. |
|-------------------------|--------------|-----------------------------|

HOLDS OUT VARNISH BETTER THAN ANY OTHER FILLER.  
MANUFACTURED BY THE  
**KEYSTONE PAINT & FILLER CO.**  
MUNCY, PA. U.S.A.

**KEYSTONE JAPAN PASTE**  
OR GEAR  PAINT  
FOR FILLING CARRIAGE GEARINGS AND BODIES.

|                          |                       |                           |
|--------------------------|-----------------------|---------------------------|
| DRIES<br>HARD & QUICKLY. | EASY<br>TO SANDPAPER. | SURFACES<br>CLOSE & FINE. |
|--------------------------|-----------------------|---------------------------|

HOLDS OUT VARNISH BETTER THAN ANY OTHER  
MANUFACTURED BY THE  
**KEYSTONE PAINT & FILLER CO.**  
MUNCY, PA. U.S.A.

Please mention "The Hub" when you write.





**Is The Printer  
To Blame**

FOR A POOR CATALOGUE IF YOU GAVE HIM

**POOR CUTS**

NO SUCH TROUBLE WITH OUR CUTS:  
HALF TONES, ZINC ETCHINGS, WOOD  
ENGRAVINGS, PEN-AND-INK AND  
WASH DRAWINGS. WE ALSO FUR-  
NISH IDEAS, ILLUSTRATE AND  
WRITE ADS. ✱ ✱ ✱ WRITE US.

**CP. ACHERE & CO.**  
221 FIFTH AVENUE  
COR QUINCY CHICAGO

## WHY USE SANDPAPER?

1. When you can get the same results in just **ONE-HALF THE TIME** by using Steel Wool?
2. When you can save just **ONE-HALF** the labor by using Steel Wool?
3. When you can do the same job **MORE EASILY** by using Steel Wool?

**USE  
BUY  
TRY**

# STEEL WOOL.

It cuts more quickly and more uniformly than sandpaper, does not clog or "gum up," and adapts itself readily to the shape of carvings, mouldings, etc., etc.

Steel Wool is very light, but exceedingly durable, and in corners or cornices, and on mouldings where sandpaper is used only with the greatest difficulty, labor and expense of time, Steel Wool does the work easily, with little labor, and in just one-half the time. Special Discounts to Consumers for Large Quantities. Write for Quotations.

**BUHNE STEEL WOOL CO.,**  
93 Nassau Street, New York.

W. F. FULLER & CO., Pacific Coast Agents, - San Francisco.  
GEO. E. WATSON CO., Chicago Agents,  
38 Randolph Street, Chicago.

**PALM,  
FECHTELER  
& Co.**

YOU KNOW OUR

# TRANSFERS

IF NOT, TRY THEM.

3 W. 13<sup>TH</sup> ST.  
NEW YORK.  
45 LA SALLE ST.  
CHICAGO.  
207 ST. JAMES ST.  
MONTREAL.



TRADE **VALENTINE'S** MARK.  
"THE STANDARD FOR QUALITY."

Manufacturers of

**VALENTINE**  
HIGH GRADE  
Coach and Car Varnishes  
and Superfine Colors.

**LAWSON**  
Coach, Furniture and  
House-Painters'  
Varnishes and  
Japans.

**VALENTINE & COMPANY**

**NEW YORK,**  
57 Broadway.

**CHICAGO,**  
390 Wabash Avenue.


**BOSTON,**  
170 Purchase Street.

**PARIS,**  
21 Rue de Lappe

**FACTORIES :**  
NEW YORK. CHICAGO.

**ESTABLISHED**  
**1832.**

**BERRY BROTHERS**  
(LIMITED)  
MANUFACTURERS OF



**CARRIAGE**  
**VARNISHES**

NEW YORK, BOSTON, PHILADELPHIA,  
BALTIMORE, CINCINNATI, CHICAGO,  
ST. LOUIS, SAN FRANCISCO.  
FACTORY AND  
MAIN OFFICE **DETROIT**

### *Varnish Troubles and Color Kinks*



May be avoided by  
using the best goods  
on the market.

WRITE TO  
**FELTON, SIBLEY & CO**

Makers of High Grade Varnishes  
and Superfine Colors.

136-140 North 4th Street  
**PHILADELPHIA.**

### **The Modern Sign Writer**

AND



### **Up-to-Date Ornamenter**

**IS WORTH DOUBLE THE PRICE.**

5 Plates of Alphabets, Sign Lay-Outs and  
Scrolls, printed in Colors. Price, \$2.00 postpaid.

**TRADE NEWS PUBLISHING CO.,**  
24-26 Murray St., New York.

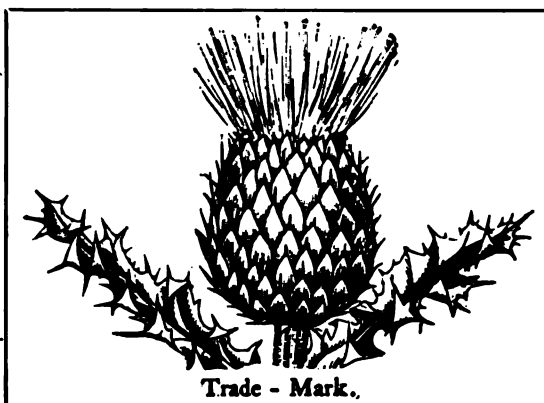


# PURE OIL VARNISH

MANUFACTURED ONLY BY

## THE PECKHAM VARNISH Co.,


*We warrant this Varnish to be made from Pure Oils; therefore it will not turn white or crack.* ♣ ♣ ♣



**IS THE  
BEST  
VARNISH  
MADE.**

**Factory: BROCKTON, MASS.**

**Boston Office: 130-132 Lincoln St.**



*A Carriage Mfg. Co. bought an \$18.00 cut  
of the G. R. Eng. Co. It captured an  
order for 150 jobs at \$80 each.  
A competing concern lost the  
above order, because of a poor \$7.00 cut.  
Who gains?*

**Grand Rapids Engraving Co.,**  
Carriage Catalog Makers. GRAND RAPIDS, MICH.

"We wish to compliment you on the excellent work you have done for us. We consider the catalog you furnished us the finest we ever sent out."  
The above is the unanimous verdict of all the carriage people we have done work for.

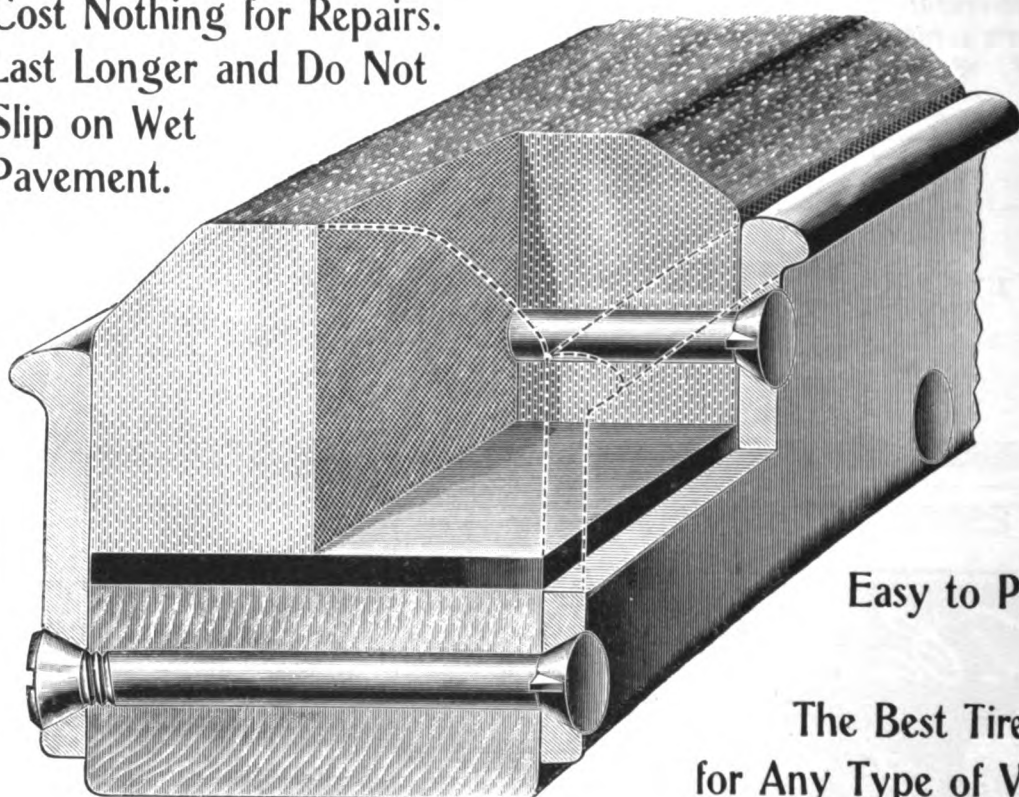
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INDURATED

# A New Departure —IN— TIRES

Cost Nothing for Repairs.  
Last Longer and Do Not  
Slip on Wet  
Pavement.



Easy to Put On.

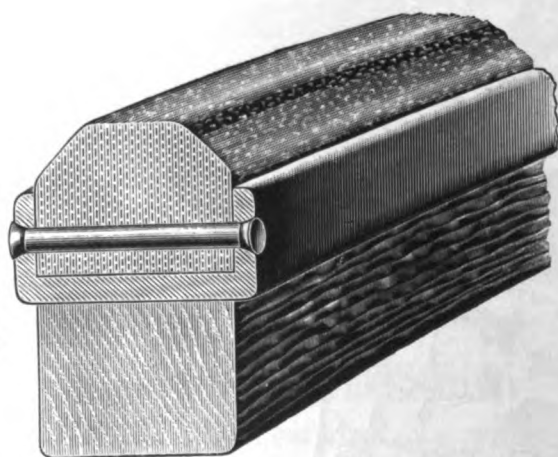
The Best Tire  
for Any Type of Vehicle.

Indurated Fabric  
Automobile Carriage  
**TIRES,**

Made Under Stevens Patent.

**Auto-Dynamic Co.,**

140 W. 39th St.,  
NEW YORK CITY.



FABRIC

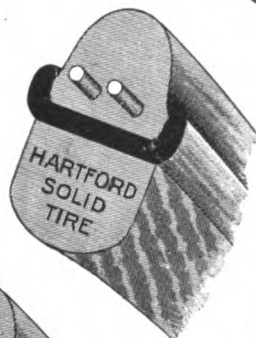
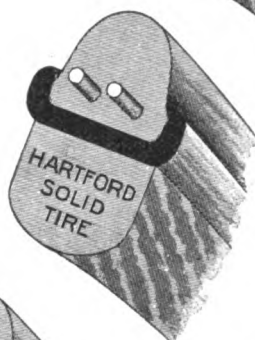
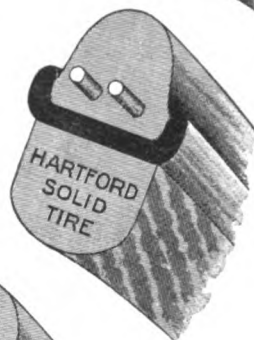


We make only the highest grade of tires, and our reputation for  
UNIFORM HIGH QUALITY will be maintained in

# HARTFORD SOLID CARRIAGE TIRES

They will be backed by the name  
of this company as a guarantee  
of excellence.

We shall be pleased to  
have our representative  
call upon those in the  
trade who are inter-  
ested in this finest  
quality solid rub-  
ber carriage  
tire.



## OUR TIRE MACHINES

are now ready and are attracting wide  
attention and merited praise as

### PERFECT MACHINES

from the standpoint of

## SIMPLICITY AND EFFICIENCY.

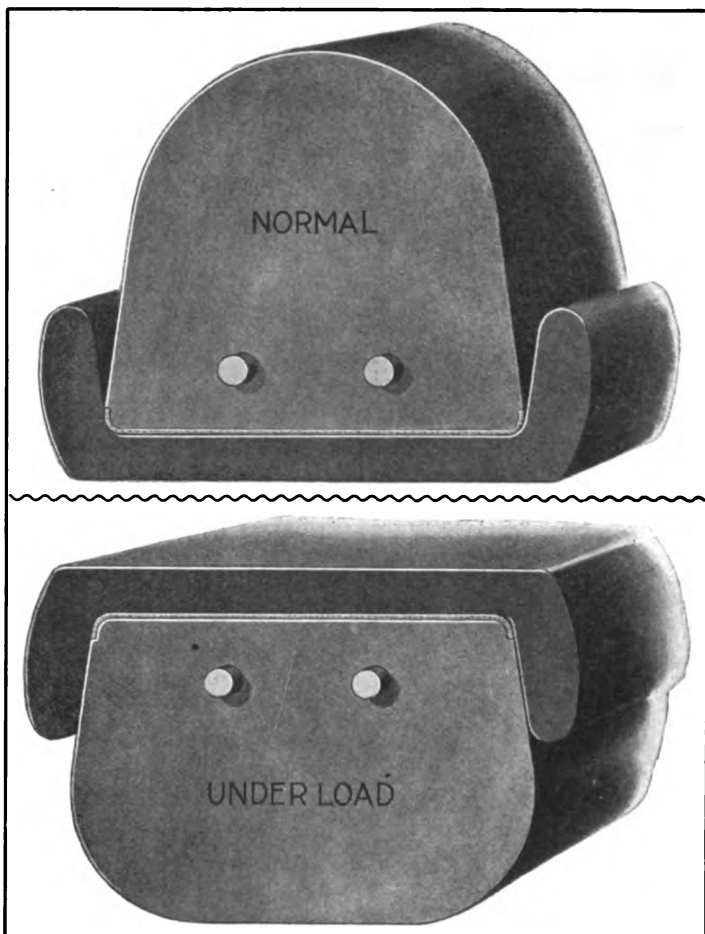
These machines are time savers and being such  
they are money savers as well.

THE HARTFORD RUBBER WORKS CO.,  
Hartford, Conn.

#### BRANCH HOUSES:—

Boston, New York, Philadelphia, Chicago, Buffalo, Washington, Cleveland,  
Detroit, Minneapolis, Denver, San Francisco.





# Carriage and... Automobile Trade

FURNISHED —

## RUBBER, CHANNELS, WIRE

AND TOOLS FOR APPLYING.

SIZES: 3-4 IN. to 3 IN.

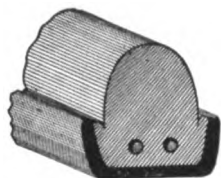
—  
This Tire Fits Into the Standard Channel.  
—

### REVERE RUBBER CO.,

BOSTON.

NEW YORK.

CHICAGO.



## DAVIE & Co.

MANUFACTURERS AND DEALERS IN

# Rubber Goods,

## LET US FIGURE FOR YOUR SPRING TRADE.

or

1310-1314 Wallace Street,  
PHILADELPHIA, PA.



War for the Trust  
Peace for the family  
**DIAMOND TIRES**  
Are pledged to both.

They are standard, and keep growing in popularity, as the endorsements of leading builders will verify.

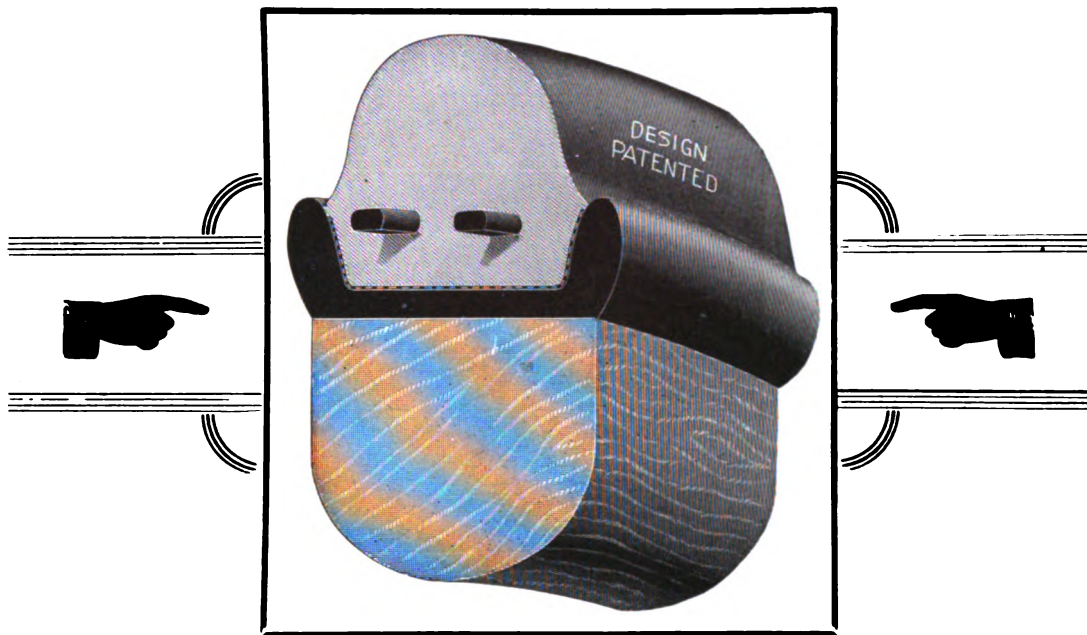
MADE IN AKRON, OHIO, BY  
**The Diamond Rubber Co.**

BRANCHES: 1717 Broadway, New York, 9 W. Seneca St., Buffalo,  
234 Congress St., Boston, 435 North Broad St., Philadelphia,  
429-431 Wabash Ave., Chicago, Detroit, Mich.



# THE INDIA

IS THE BEST AND WE PROPOSE TO KEEP IT SO.



Manufacturers of all kinds of vehicle tires.

Pneumatic carriage tires,

Pneumatic automobile tires,

Solid car tires,

Solid endless tires for motor vehicles.

Prices cannot be compared without comparison of quality.

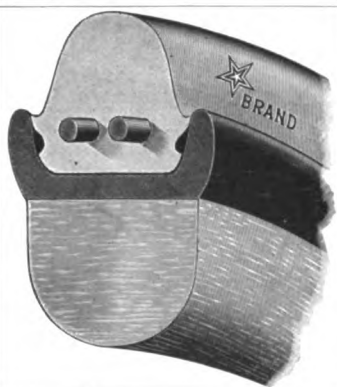
This we invite.



## INDIA RUBBER CO.,

### AKRON, OHIO.





OUR STAR BRAND SOLID RUBBER TIRE, HAVING PROVED ITSELF TO BE ALL WE CLAIM, WE NOW CHALLENGE THE WORLD TO PRODUCE ITS EQUAL. IT FITS ALL STANDARD CHANNELS. THE GROOVE IN THE SIDES OF THE RUBBER PROVIDES FOR PROPER DISPLACEMENT WHEN UNDER A LOAD, STOPS THE CREEPING, MAKES IT RIDE EASIER AND LAST LONGER. IT HAS NO PEER.

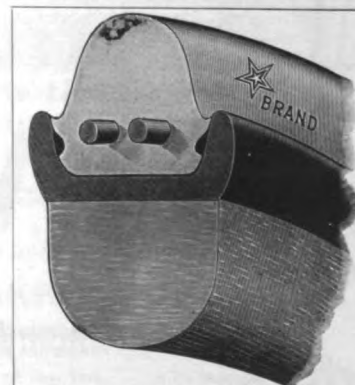


WE supply Tools at small cost with complete instructions for putting on in your own shop, and guarantee to teach you to do as perfect a job of Rubber Tiring as can be done, or no sale. We respectfully solicit your business.

••

**BATAVIA RUBBER TIRE CO.,**  
**BATAVIA, N. Y.**

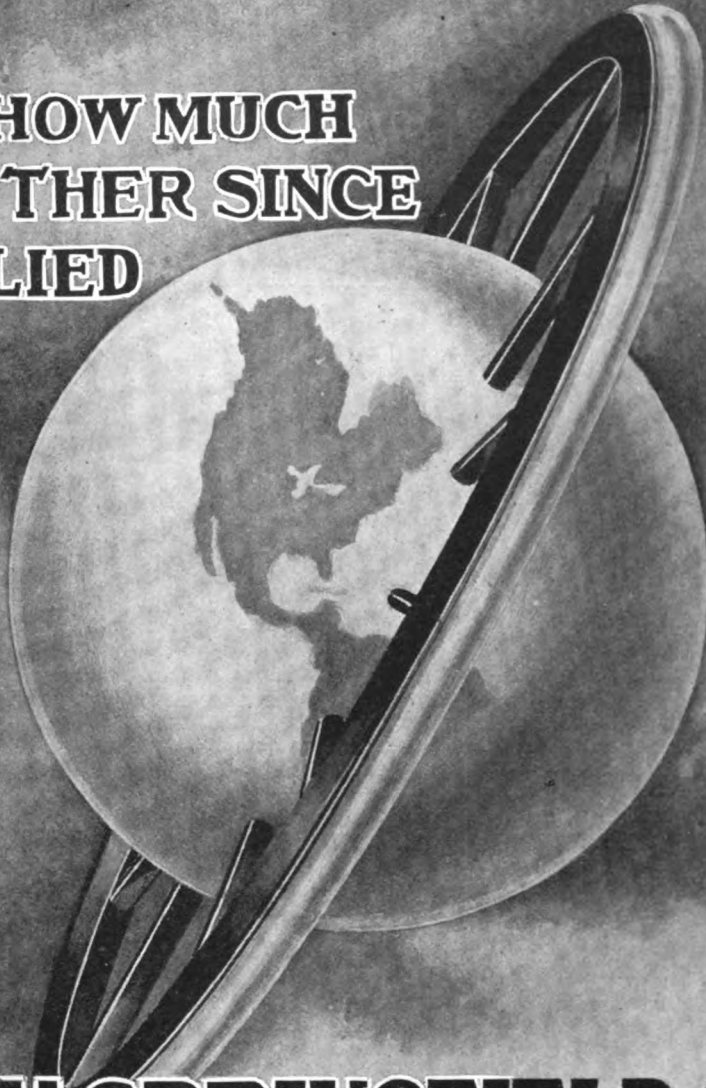
WESTERN BRANCH: STAR RUBBER TIRE CO., MOLINE, ILL.





# THE WORLD MOVES

BUT-HOW MUCH  
SMOOTHER SINCE  
SUPPLIED  
WITH



**KELLY-SPRINGFIELD TIRES  
THE BEST  
SOLID RUBBER TIRE ON  
EARTH.**



**GOOD TIRES,**  
**GOOD PRICES AND GOOD TREATMENT**

ARE WHAT YOU



CAN GET FROM THE

# Kokomo Rubber Co.

## Kokomo, Indiana.

7 Arch St., Boston. 82 Broad St., New York City. 135 Lake St., Chicago. Portland, Oregon.

To guard against deception see that each length bears  
**OUR FULL NAME AND TRADE MARK, thus**



We have no connection with the Consolidated Rubber Tire Co.  
 Instead of paying Royalties we put the value in the Rubber.  
 Being the **LARGEST JOBBERS** in the United States of  
**SOLID RUBBER** we are enabled to offer **UNUSUAL**  
**INDUCEMENTS** to **LARGE BUYERS**.

The high grade of our Rubber will be maintained.

# Kelly Springfield Rubber Tire Co.

Incorporated August 31, 1899.

ROBERT KERCHEVAL, President.

**DAVENPORT, IOWA.**



# ATTENTION

Carriage Manufacturers ! Advertise your vehicles by equipping them with the

## New York Vehicle Tire,

The only Long Distance Pneumatic Tire giving perfect satisfaction. You sell it, we back it up.

No Punctures.

No Rim Cutting.



No Delays.

No Replacements.

IT'S THE LEADER FOR 1901.

We are at the Pan-American Exposition—Manufacturing Building, Space No. 47.

**NEW YORK BELTING AND PACKING COMPANY, Ltd.,**  
25 PARK PLACE, NEW YORK.

### BRANCH STORES:

BOSTON: 24 Summer Street. PHILADELPHIA: 724 Chestnut Street. ST. LOUIS: 411 No. 3d Street. CHICAGO: 150 Lake Street.  
INDIANAPOLIS: 229 South Meriden Street. BALTIMORE: 101 Hopkins Place. SAN FRANCISCO: 509 Market Street.

# VEHICLE TIRES.



SEE THE ONE WIRE AND ITS BEARING ?

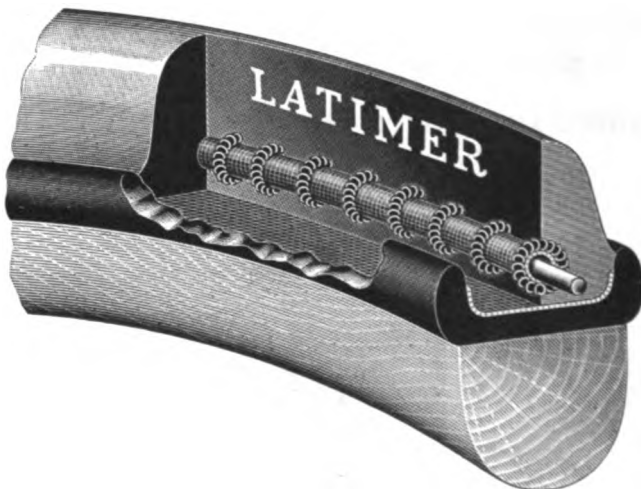
The Only Tire in Which Retaining Wire Is  
So Protected That All Danger of Cutting Out  
Rubber Is Eliminated.

**THE**  
**LATIMER RUBBER TIRE**  
**CO.**

NEW YORK,  
15 Platt Street.

CHICAGO,  
24 South Clinton Street.

WORKS:  
HUNTLEY, ILLINOIS.



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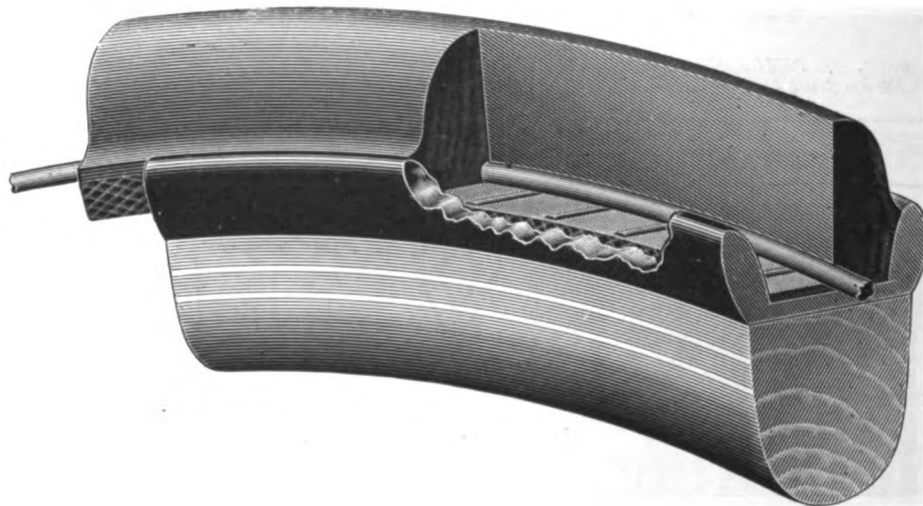


# **“WEMAKA”**

# **PERFECT VEHICLE TIRE**

**Perfection in Tire Construction.**

**Wise Buyers  
Buy Cross Wire Tires!**



**CROSS WIRES** are to a tire what a railroad tie is to the rail---a support.

**NO EXPERIMENT**---one year in service has convinced the user, manufacturer, our competitors and ourselves that it is all we claim for it.

Fifty years we have been compounders and vulcanizers of Rubber, which insures the buyer that our Rubber is right, and made to withstand wear.

---

**N. J. CAR SPRING & RUBBER CO.**  
**JERSEY CITY, N. J.**

Please mention "The Hub" when you write.

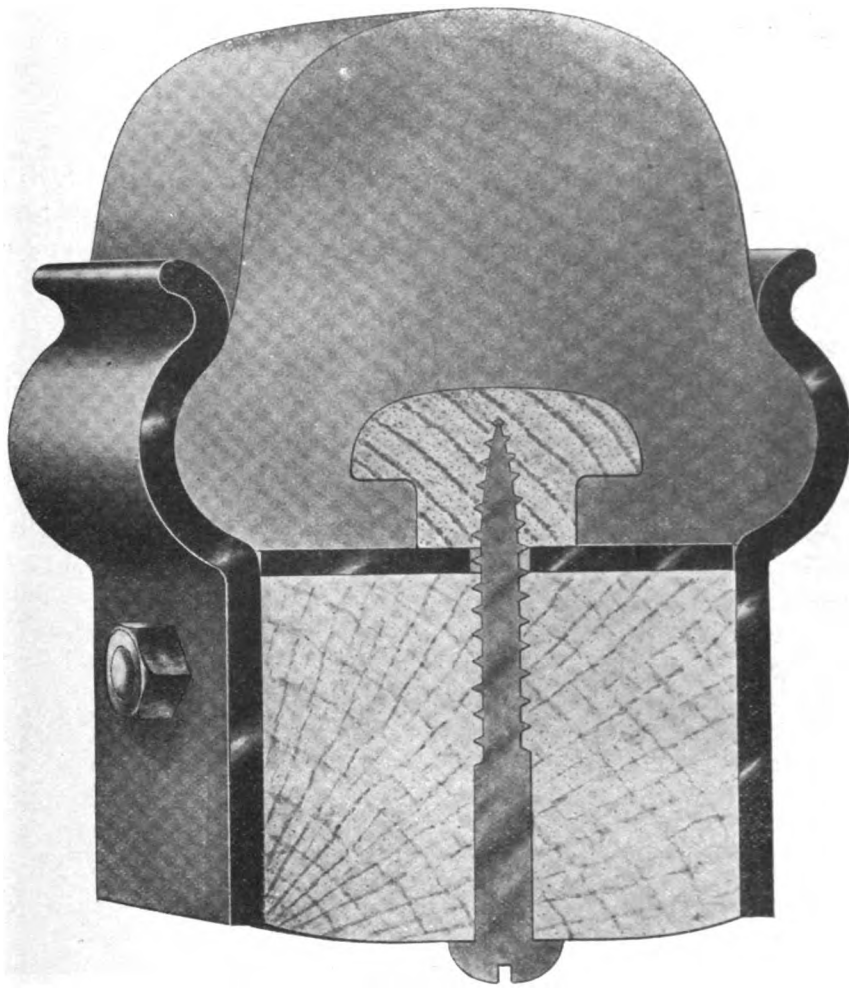


*The Hub*

17

# DEWES & WHITING

## Double Locked Compressed Tire



Pat. Jan. 30, 1900.

Made either endless or sectionally.  
Internal lock being made of hard  
wood will not corrode. :::::

---

FLANGE RINGS MANUFACTURED FOR THE TRADE.

**DEWES & WHITING,**  
MANUFACTURERS.

243 CENTRE ST., N. Y. C.

Please mention "The Hub" when you write.



# GOLD A VIRGIN GOLD MINE GOLD

IS THAT OWNED BY

## The Golden Tree Mining & Milling Co.

in the heart of the Ketchikan District of Southeastern Alaska, which is the richest gold-bearing part of the world.

It is located on the estuary known as "Thorn Arm," 600 miles north of Seattle and south of Dyce and Skagway, and has great natural advantages, being surrounded by the warm waters of the Japanese current. Like the Gulf Stream the water never freezes, modifying the temperature so that the mine can be worked the year round. The property is at tidewater and the ore can be carried to the smelters at light expense.

**The entire property of the Golden Tree Mining and Milling Co. is underlaid with the RICHEST GOLD-BEARING QUARTZ, which ledge ore now ASSAYS OVER \$100 PER TON and gives promise of two to three times that amount.**

The Golden Tree Mines are in the same contact and a short distance from the famous Sea Level Mine, recently capitalized for a large sum, and all its stock was sold in New York City. The Sea Level Mine is putting out enormous quantities of rich ore.

The Golden Tree Mines are far richer and show better prospects than the Sea Level ever did until it was developed.

Immediately surrounding the Golden Tree Mines are a number of other exceedingly profitable mines, such as the Gold Standard, Sea Breeze, Gold Coin, Gold Mountain, Sea Level, Gold Hill, Bragdon, Sutton and others.

Fidelity in the management of the property is assured by the fact that Hon. John R. Rogers, Governor of the State of Washington, is the president of the company, and Hon. John H. Reeves, a Justice of the Supreme Court, is its vice-president.

**This is a rare chance to make a safe and profitable investment which is inviting to the large and small investor alike. Orders of any size are acceptable.**

In order that investors may be fully protected, the officers of the company have employed the firm of Gardenhire & Vandivert, of New York City, as counsel. This is itself a guarantee, for this well-known firm would not permit itself to even constructively indorse a proposition which it had not investigated and upon whose officials it could not rely.

Orders will receive prompt attention. Address the Company at

32 BROADWAY, NEW YORK, or

**E. C. BALDWIN,**

MILWAUKEE BUILDING,

ALBANY, N. Y.

**The same rich vein of free gold, sulphides and tellurides runs under ALL this section of contiguous property. THIS IS NO EXAGGERATION OR DREAM, for results have been realized from all of these mines by actual work and development.**

The stock of these companies, which sold a short time ago for a few cents a share, is now steadily bought by the knowing ones at par or more.

The Golden Tree Mining and Milling Co., capitalized for \$2,000,000, at \$25.00 per share, all fully paid up and non-assessable, and the directors have decided to offer to the public a limited amount of the Treasury Stock—8,000 shares at 25 cents on the dollar, viz., \$6.25 PER SHARE NET CASH.

This Treasury Stock is sold for the express purpose of putting in additional stamping and other machinery for the further development of the mines.

As soon as the money procured from this sale of stock is invested in crushers and other machinery, which it will be inside of six months, every share of this stock WILL BE WORTH PAR.

It will easily pay an annual dividend of more than 10 per cent. on its par value, or 40 per cent. on the investment.



---

## **THE GOLD FEVER OF '49 SURPASSED BY THAT OF OIL IN 1900.**

---

### **California the Mecca of Investment and Speculation.**

THE MANY BIG GUSHERS LATELY DEVELOPED BRING MILLIONS OF  
CAPITAL INTO THE OIL FIELDS.

---

FORTUNES MADE IN A NIGHT! Men retire at night not knowing where the money is coming  
from to pay their next month's board and rent, and wake up to find themselves practically millionaires.

---

# **Flashlight Oil Company**

OF SAN FRANCISCO, CAL.

Capital, \$500,000.

Par Value of Shares, \$1.00

AND NON-ASSESSABLE.

---

## **Vast Amount of Land Owned**

The Flashlight Oil Company owns 1280 Acres of Oil Land  
located in the famous Coalinga Oil City District, which  
means success is sure.

## **A Speculative Investment**

This Company offers to the Eastern public a proposition  
hard to equal. The land alone is worth double the amount  
of their entire capitalization at the present price of stock.

## **Judgment Must Tell You Go Buy**

You may have dealt with fakes or had bad luck. A hun-  
dred and one things may have happened to you, but that  
does not detract from the merit of this proposition.

## **50,000 Shares For Sale**

In order to rush development work this block is offered for  
sale at 20 cents per share. Write for Prospectus. Address

**THE COMPANY, at San Francisco, Cal.**

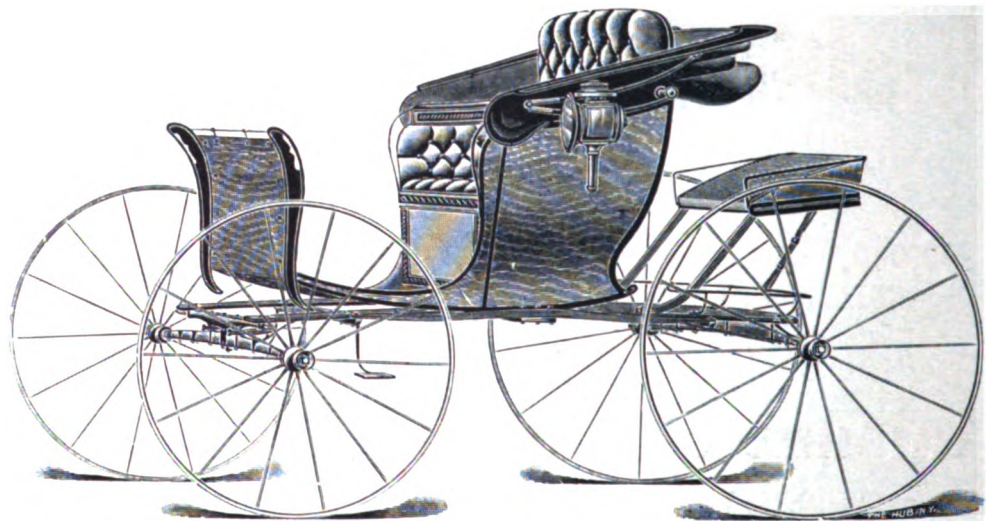
or M. F. WELLS, Fiscal Agent, 68 State Street, Albany, N. Y.



## **THE SUPERIORITY IN DESIGN,**

CONSTRUCTION, FINISH AND EQUIPMENT OF OUR FOUR HUNDRED SERIES BUCKBOARDS HAVE MADE THEM THE STANDARD OF COMPARISON FOR OTHER BUILDERS OF VEHICLES IN THE BUCKBOARD LINE.

THE STATEMENT, "AS GOOD AS A WATERLOO," MEANS TO THOSE WHO ARE "VEHICLE WISE," THAT HIGHER PRAISE IS IMPOSSIBLE.



"Waterloo," No. 437, Colonial Spyder Curricie.

THE CARRIAGE DEALER WHO IS CATERING TO HIGH-CLASS TRADE WILL FIND THIS LINE A DESIRABLE ADDITION TO HIS STOCK, NOT ONLY IN THE CHARACTER IT WILL GIVE, BUT IN THE PROFITS IT WILL MAKE HIM.

CATALOGUE AND PRICE LIST MAILED TO DEALERS, IN TERRITORY NOT ALREADY ASSIGNED, ON REQUEST.

EARLY APPLICATION IS ADVISED.

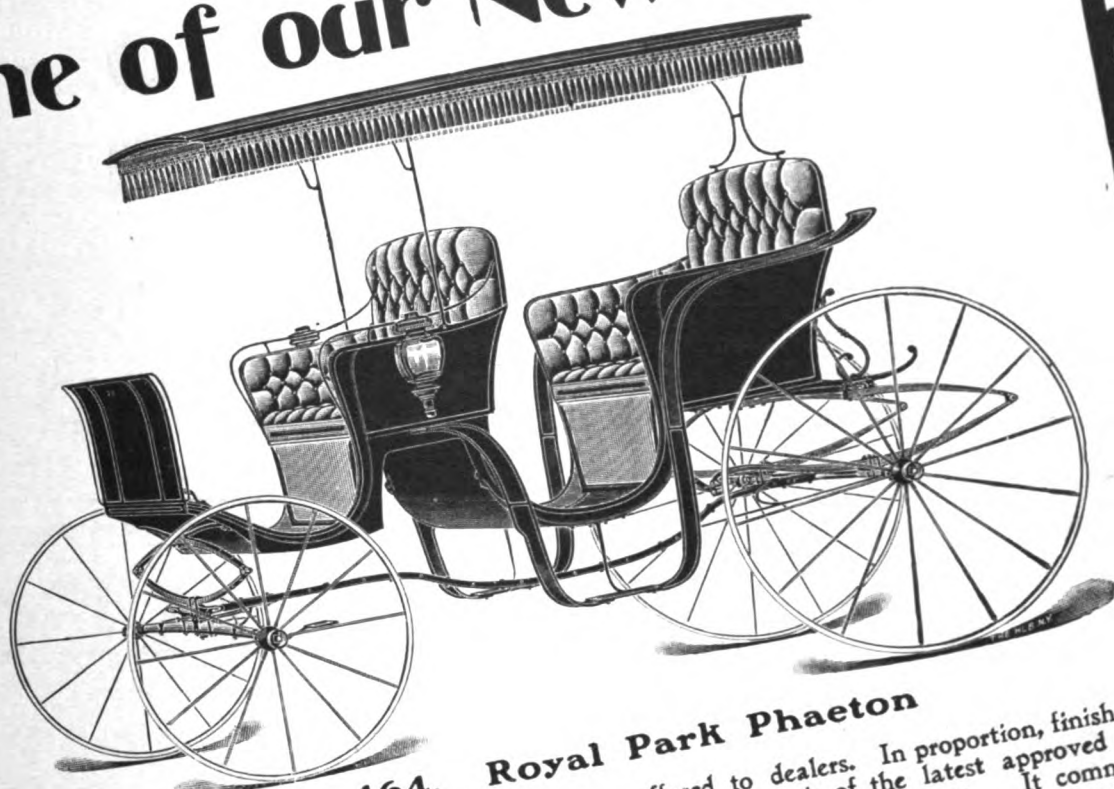
THIS LINE OF BUCKBOARDS IS MEETING WITH MUCH FAVOR IN MANY OF THE PAN-AMERICAN COUNTRIES, AND WE QUOTE ATTRACTIVE PRICES, CAREFULLY BOXED, ON BOARD VESSEL AT ALL EXPORT POINTS.

**WATERLOO WAGON COMPANY, Ltd.,**  
**WATERLOO, SENECA CO., N. Y.,**  
**U. S. A.**



# WAGON WATERLOO COMPANY LTD.,

One of our New Styles



**No. 464. Royal Park Phaeton**

We show above one of the best values ever offered to dealers. In proportion, finish and equipment it is absolutely correct in every detail. The top is of the latest approved construction and is easily removable, making a very handsome open carriage. It commands the immediate and favorable attention of the buyer who is looking for an exclusive high-grade vehicle at the right price. Vehicle Dealers in the Pan-American countries will receive our Special Export Price Sheet free by mentioning "The Hub" when they write.

Unusual care is given to boxing for ocean shipment to economize space and secure safe arrival. Prices are quoted on board vessel at export points in our price sheet.

**NEW CATALOGUE AND REVISED PRICE LIST FREE**

# SENECA CO. WATERLOO N.Y.

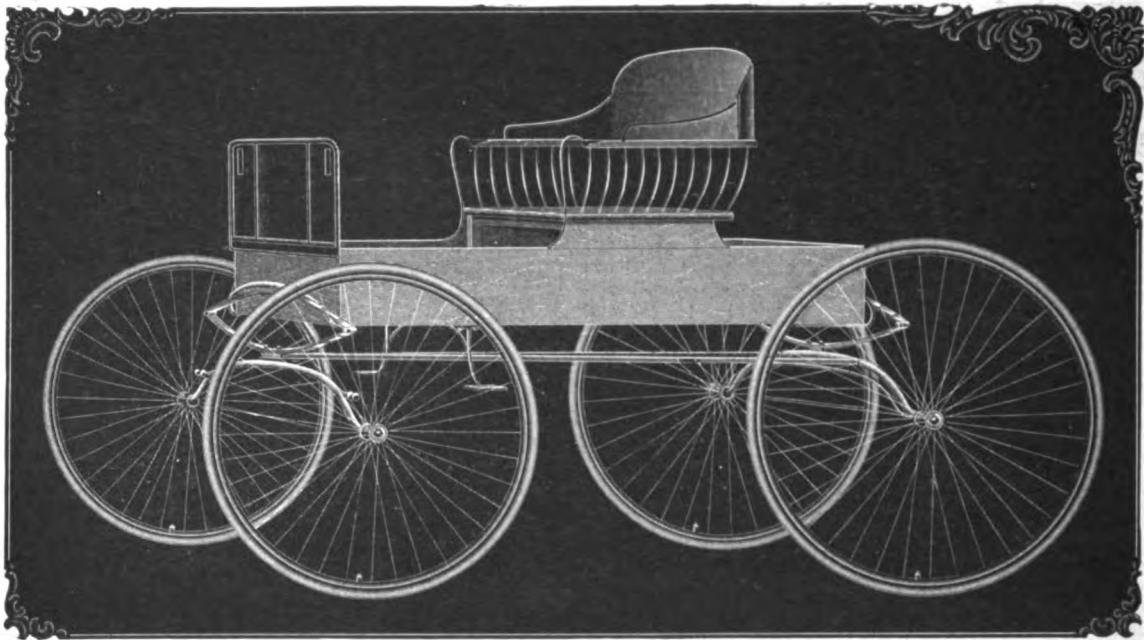
LATE STYLES

FINE FINISH



# THE FRANTZ "AKRON."

BODIES, BIKES IN THE WHITE, GEARS.



WE SELL THEM  
CHEAPER THAN  
YOU CAN MAKE  
THEM

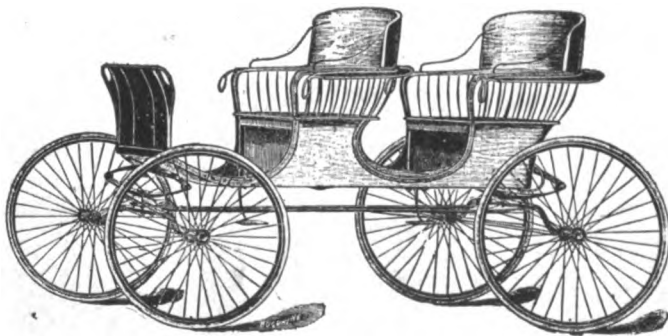
WE NAME A  
SURPRISING LOW  
FIGURE ON THIS  
BIKE.

ORDER SAMPLE.

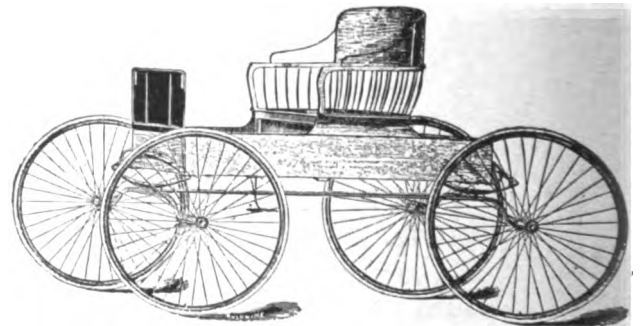
NO BETTER VALUE FOR THE MONEY ON THE MARKET.

THE FRANTZ BODY MFG. CO., AKRON, OHIO.

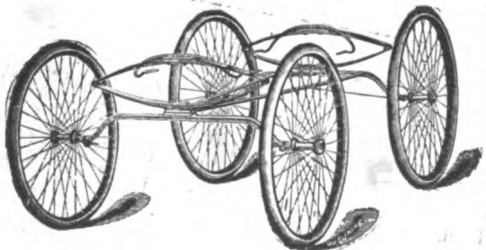
# FITCH GEARS



FITCH PNEUMATIC SURRBY (In-the-White).



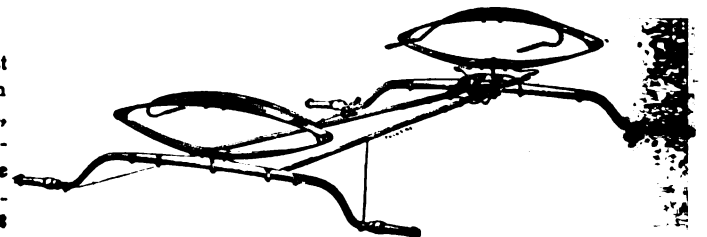
FITCH PNEUMATIC ROAD WAGON (In-the-White)



FITCH PNEUMATIC ROAD WAGON GEAR.

PRICES TO SUIT  
THE TIMES.

Send for our latest  
catalogue, with  
full line of gears,  
wagons in-the-  
white and carriage  
specialties illustra-  
ted. ❧ ❧ ❧ ❧



FITCH IMPROVED BIKE AND PNEUMATIC GEAR.

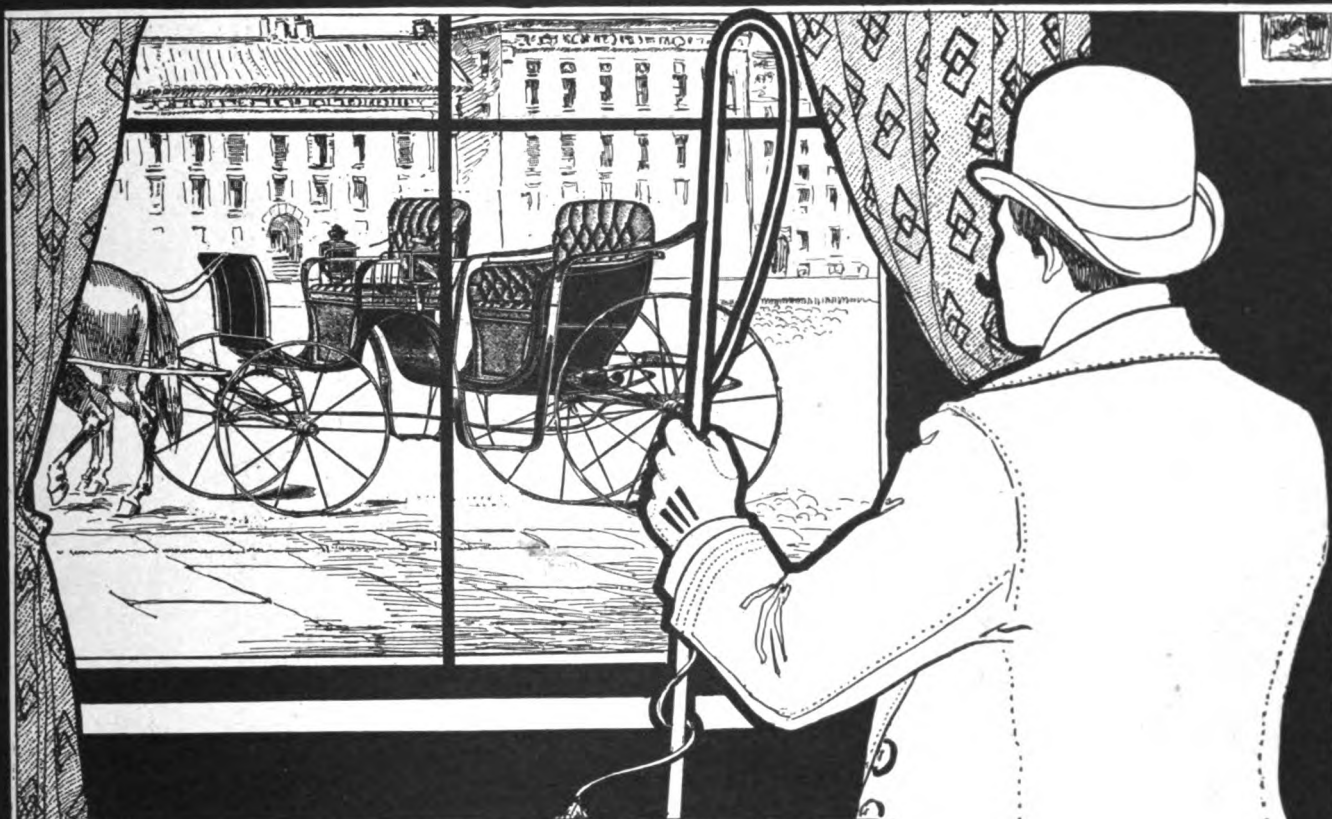
We make Bike Gears and Wagons in-the-White, with Wood Hub Wheels and Solid Rubber Tires.

SHOWING ALL STYLES OF PNEUMATIC AND BIKE WORK.

FITCH GEAR CO., Rome, N. Y.

Please mention "The Hub" when you write.





## A Babcock Driver.

The driver of a Babcock carriage is a pleased driver—every time, no matter what the style of vehicle.

Perhaps you have made a profitable demonstration of this fact.

You can be reasonably sure of it, even though you never sold a Babcock job.

Babcock vehicles have been sold

More than long enough, we believe, to prove to an intelligent trade the practical merit of a line of these carriages.

If Babcock vehicles hadn't pleased the users they wouldn't have been made and sold for as many years as they have.

Of course not.

Then, why don't you get a Babcock catalogue and get some of the money?

**H. H. BABCOCK COMPANY,**

FINE CARRIAGE BUILDERS,

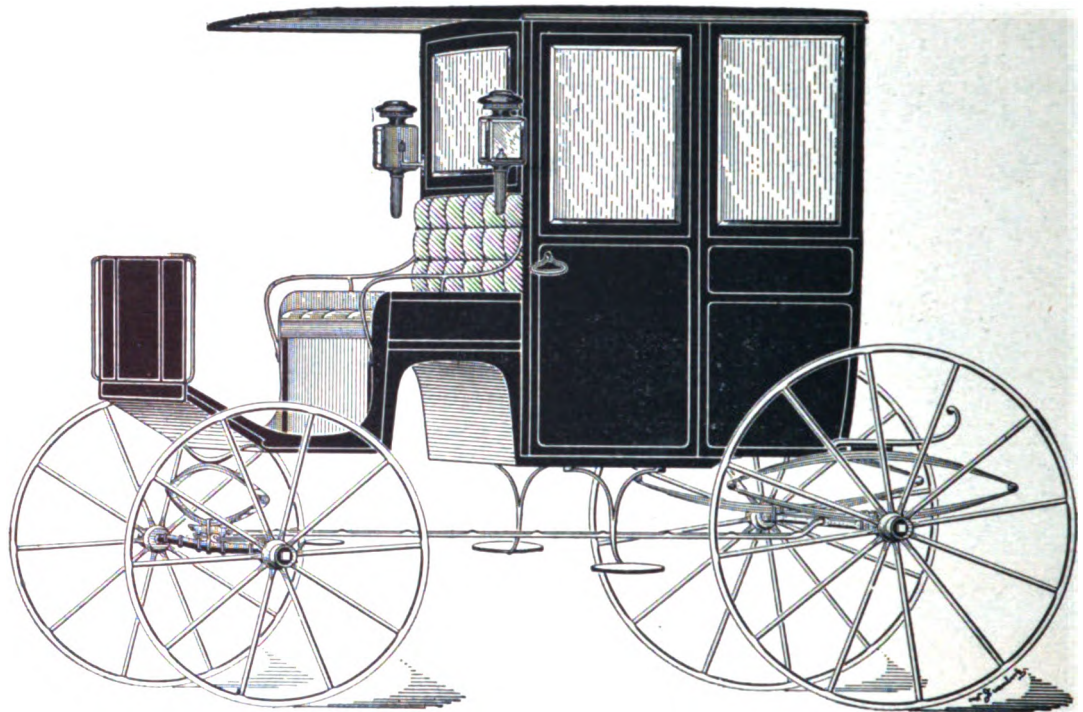
WATERTOWN,  
N. Y. ❖ ❖ ❖

CHARLES AUSTIN BATES N.



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HIGH GRADE VEHICLES  
IN-THE-WHITE  
FOR THE TRADE.

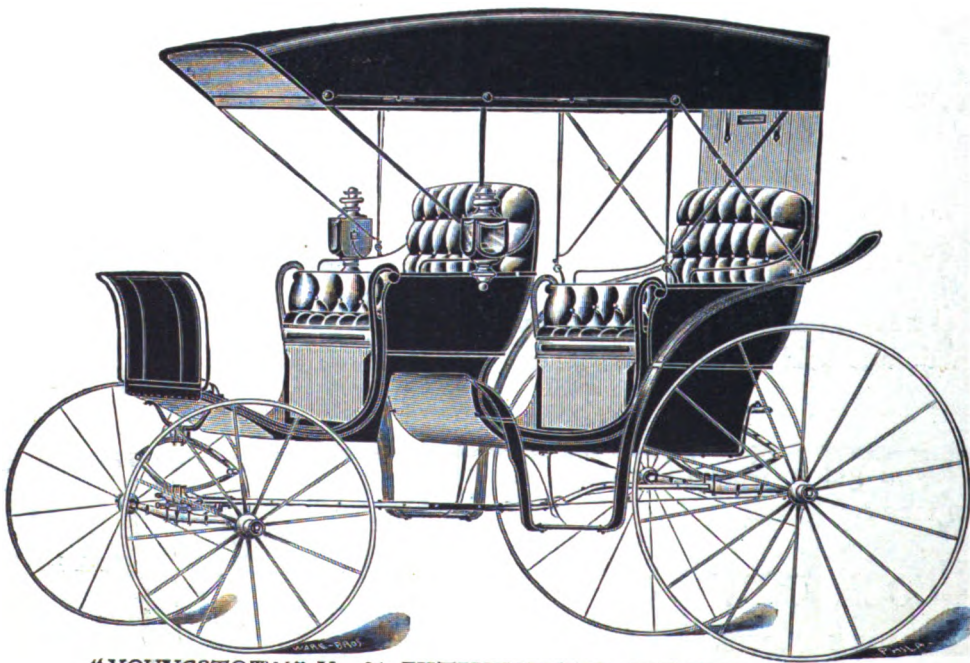


No. 121 DEPOT WAGON.

WRITE FOR CATALOGUE  
AND PRICE LIST.

**AMESBURY, MASS.**

## "Youngstown" Dealers' Delight.



"YOUNGSTOWN" No. 84, EXTENSION TOP CUT-UNDLR SURREY.

No. 84 "Youngstown" not only pleases every individual buyer, but its popularity has become so universal that in many sections it has been styled the "Dealers' Delight."

It is strictly high grade in every detail. Description appears on pages 6 and 7 of our catalogue.

The top is best brand hand buffed leather; leather curtains and leather covered bow sockets.

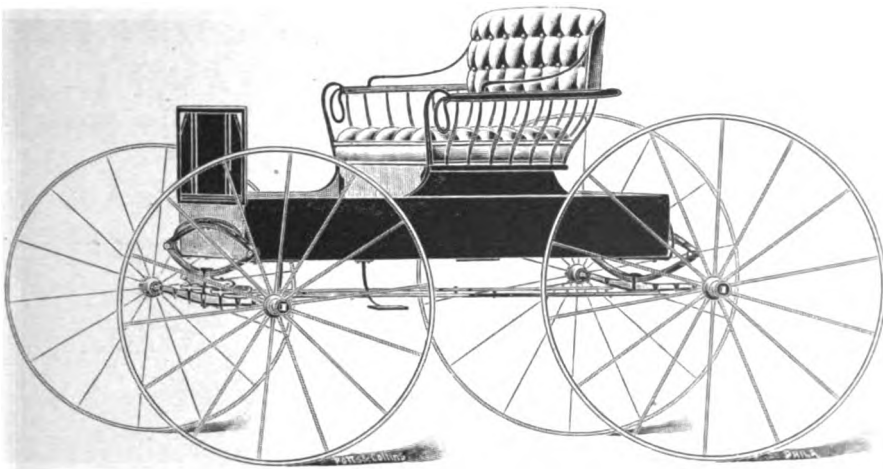
We would be pleased to quote price and send catalogue to dealers.

MANUFACTURED BY

THE **YOUNGSTOWN GARRIAGE & WAGON CO.,** YOUNGSTOWN, OHIO.

Please mention "The Hub" when you write.



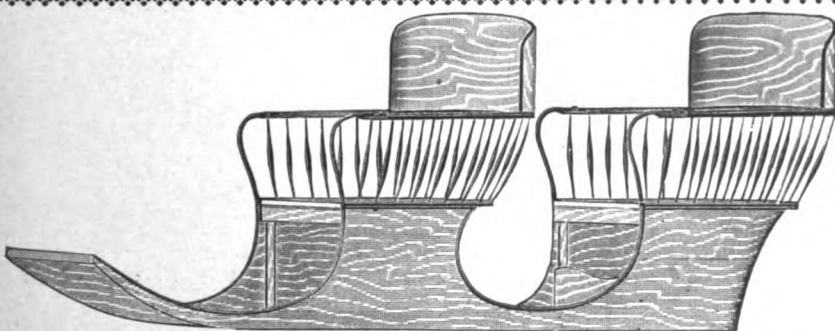


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Open Rubber Head Springs. Bedded Axles. A quick money maker for every dealer. We build a large variety of Runabouts, Buggies, Surreys, Pneumatics and "Dandy" Wagons.

**SULLIVAN BROS.,**

*Rochester, N. Y.*



THREE-QUARTER SURREY, 22½ by 63 in., . . \$9.00.  
WE BUILD THE SAME IN CUT-UNDER.

# BODIES

SURREY, TRAP, PHAETON BODIES.  
AND BUGGY . . . . .

PANEL, STICK AND  
WICKER SEATS. *في*

DELIVERY WAGONS BUILT TO YOUR  
SPECIFICATIONS.

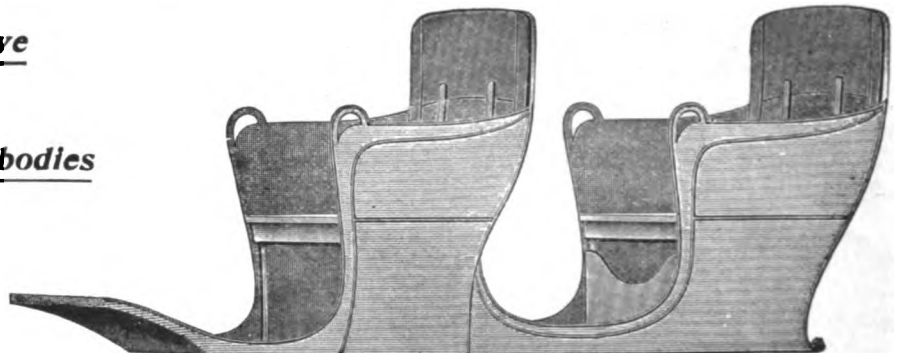
**THE MILLCREEK WAGON CO., CINCINNATI, OHIO.**

# BODIES! BODIES! BODIES!

Many new and attractive  
designs for 1900.

A choice lot of stylish bodies  
always in stock.

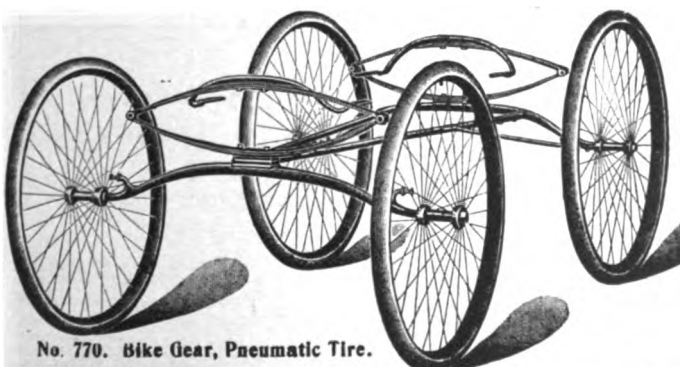
REQUEST WILL BRING  
CATALOGUE AND PRICES.



No. 153. SURREY. Price, \$10.00.

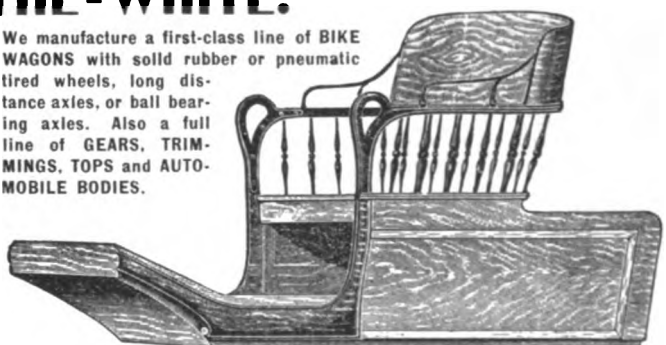
**CINCINNATI PANEL CO., Cincinnati, Ohio.**

## SCHUBERT'S WAGONS IN-THE-WHITE.



No. 770. Bike Gear, Pneumatic Tire.

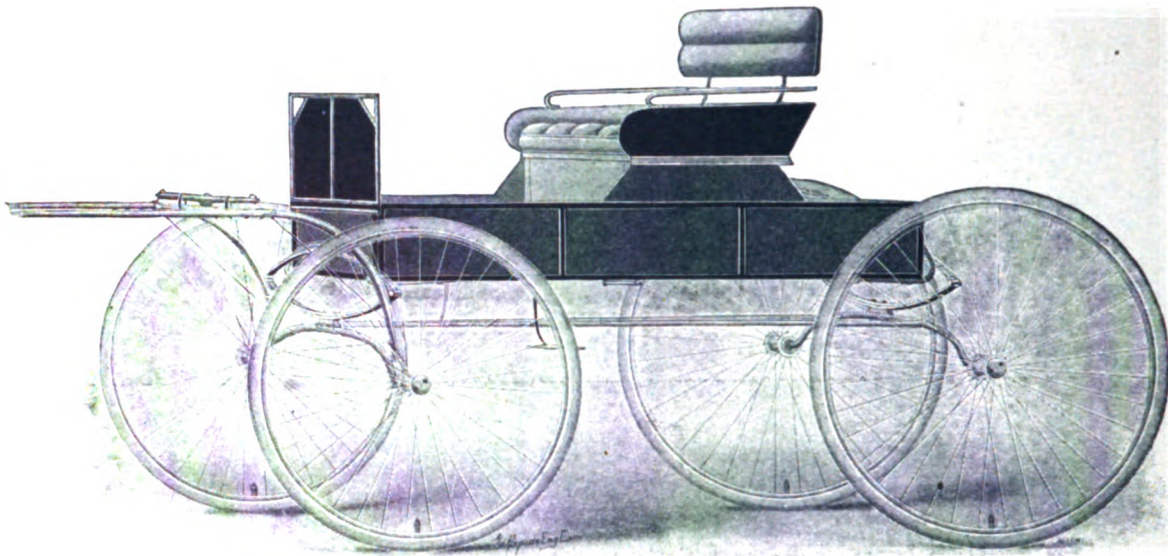
We manufacture a first-class line of BIKE WAGONS with solid rubber or pneumatic tired wheels, long distance axles, or ball bearing axles. Also a full line of GEARS, TRIMMINGS, TOPS and AUTOMOBILE BODIES.



AUTOMOBILE BODY.

**SCHUBERT BROS. GEAR COMPANY, ONEIDA, N. Y., U. S. A.**



**No. 133 RUBINSTEIN.**

The  
Latest  
Idea  
In a  
Pneumatic  
Wagon,  
Embracing  
The  
New  
Style  
Beverly  
Body and  
Seat.

**No. 133 Rubinstein Wagon.**

No. 133 represents the latest idea in a pneumatic wagon, embracing the new style Beverly body and seat. In the manufacture of this wagon we have given attention to the smallest details, not only in the selection of material of the very best quality, but in the rounding out and finishing; making in the end the truly finished piece of work.

This wagon is of the proper proportion and without fault or blemish.

WRITE AND GET FULL DESCRIPTION.

**THE RICHLAND VEHICLE CO.,** Mansfield, Ohio,  
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**63 BEAUTIFUL STYLES.**

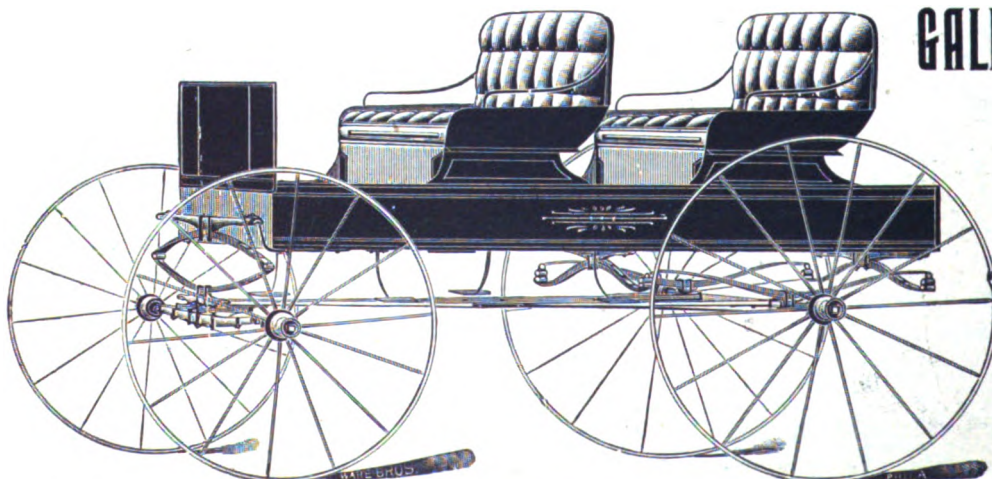
**Swell "Rigs" for Swell Cobs and Ponties.**

Send for new and beautifully illustrated catalogue No. 14 of up-to-date novelties and quick-selling profit makers. \* \* \*

**Walborn & Riker,**

PRIZE BUILDERS,

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**GALION WAGON & GEAR CO.**

GALION, O.

**MOST COMPLETE  
WAGON AND GEAR  
FACTORY ON EARTH.**

DID YOU  
SEE OUR LINE AT  
CINCINNATI?

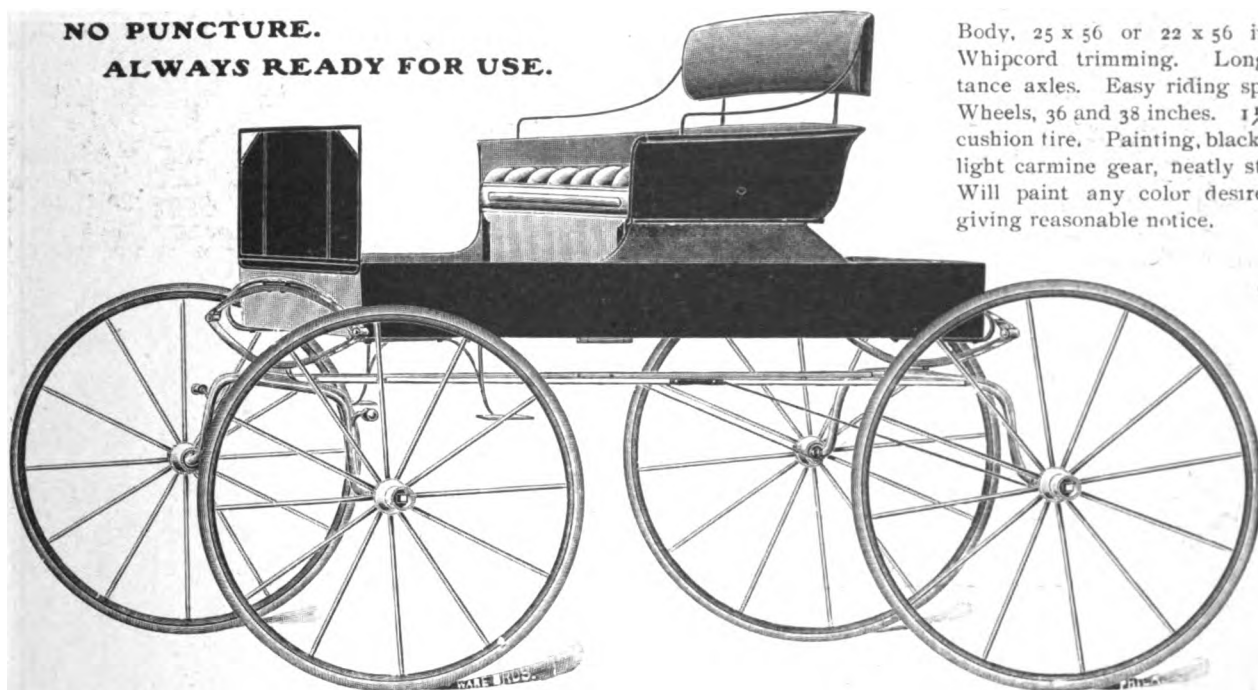
Please mention "The Hub" when you write.



# THE BEST

Good Material and Fine Workmanship are what we claim for every job manufactured by us.

**NO PUNCTURE.  
ALWAYS READY FOR USE.**



Body, 25 x 56 or 22 x 56 inches. Whipcord trimming. Long distance axles. Easy riding springs. Wheels, 36 and 38 inches. 1 1/4 inch cushion tire. Painting, black body, light carmine gear, neatly striped. Will paint any color desired by giving reasonable notice.

No. 49. MONTCLAIR RUNABOUT.

**Send for Catalogue and Price List.**

**BIRDSALL, WAITE & PERRY MFG. CO.,** WHITNEY'S POINT, N. Y.

SHORT & MILBURN, 1665 Broadway, New York, Eastern Sales Agents.

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MANUFACTURERS OF

## Traps and Pony Vehicles IN VARIETY.

The Princess Pony Phaeton is one of our attractive styles. We build the celebrated Maplewood Carts for domestic use and export. Cuts and prices on application. *o o o o o o o o o*



### INEXPENSIVE, SERVICEABLE, CONVENIENT.

Just the "Trick" for all kinds of General Hauling. Carriages, Cotton, Hardware, Feed, Baggage, Machinery, etc., etc. Made in 3 styles, several sizes; tilting seat; also furnished with removable 10 inch sides and ends. Light enough for one horse; strong enough for two-horse loads. Platform stands 36 inches from ground and clears the wheels. Write for particulars and prices.

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BUILDERS OF FARM AND TEAM WAGONS.

A special rebate will be allowed those who mention THE HUB in writing.



## BEECHER PATENT CARRIAGE STEP

FOR CARRIAGES AND AUTOMOBILES.

THE BEECHER STEPS ARE MADE OVAL, ROUND AND SQUARE, IN DIFFERENT SIZES, ALSO WITH OR WITHOUT RUBBERS.

"Neatest," "Strongest" and "Cleanest."

WRITE FOR DESCRIPTIVE  
CIRCULAR AND PRICES.

**KELSEY COMPANY, New Haven, Conn.**

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**IT DOES ALL A FOUR-WHEELER WILL DO—AND MORE.**

But it **CANNOT** be tipped over as a four-wheeler can. It is not a toy or a freak.

It has been used and tested by some of the most conservative drivers of the country, who pronounce it superior to any four-wheeler.

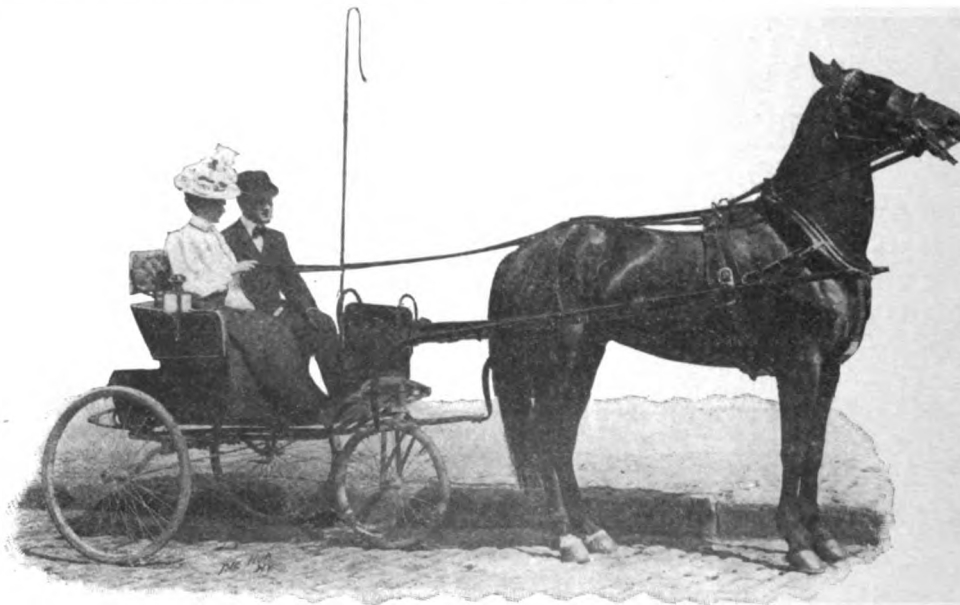


# THE LENGERT WAGON CO.

INCORPORATED.  
ESTABLISHED 1840.

Sole Manufacturers  
**THE BLOOMER SAFETY THREE WHEELER,**

**302-304-306 West 53d St., NEW YORK, U.S.A.**



PATENTED IN UNITED STATES, CANADA AND EUROPE.

*No. 7. Stanhope.*

Ideal vehicle for ladies.

**Shortest double hitch of any vehicle in the world.**



While our single hitch is but 5 inches longer than the closest hitch four-wheeler, our double hitch is from 18 inches to 2 feet shorter than any other vehicle.    ◊    ◊    ◊    ◊    ◊    ◊    ◊    ◊

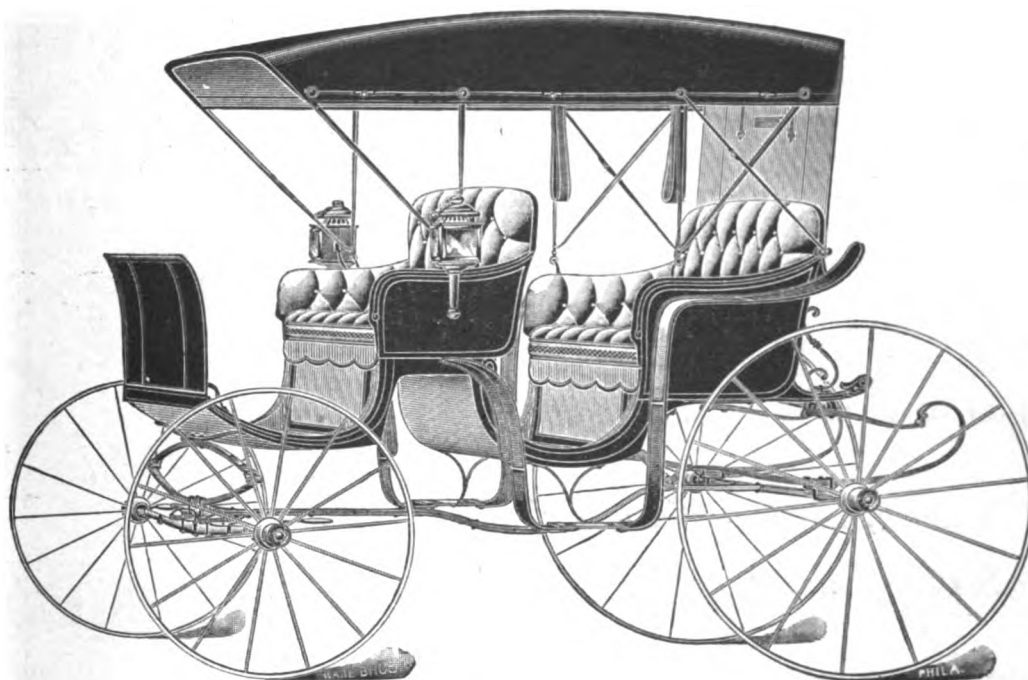




# BLEES-McVICKER CARRIAGE CO.,

Manufacturers  
of **FINE VEHICLES.**

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STYLE,  
QUALITY,  
WORKMAN-  
SHIP.  
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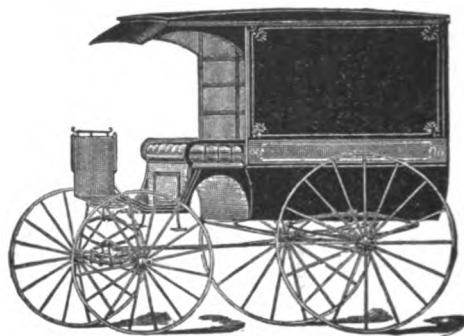
No. 140 CARRIAGE.

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It Will  
Pay You to  
Investigate  
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WRITE FOR  
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MACON, MISSOURI.

*Best in the Market*

We build  
Honest Wagons  
at  
Honest Prices.



No. 35

The  
Quality  
of our work is  
Guaranteed.

.... WRITE FOR OUR ILLUSTRATED FORM N CATALOGUE AND PRICE LIST. ....

**THE O. ARMLEDER CO.**

**Cincinnati, Ohio.**

Don't you mind if others say  
That advertising doesn't pay.  
Such people surely—there's the rub—  
Have never patronized THE HUB.

You are reading this ad.  
Why don't *you* buy this  
space, so others will read  
about *your* business?



*We can save you money.....*

# Carriage Lamps

*of the finest quality, also medium and  
low priced goods.*

WE MAKE  
LAMPS  
FOR EVERY  
KIND OF  
VEHICLES.

NEW STYLES  
BEING  
CONSTANTLY  
INTRODUCED.



OUR FACILITIES  
UNEXCELLED.

# Carriage Lamps

*of the finest quality, also medium and  
low priced goods.*

## Richmond, Ind., Mfg. Co.

RICHMOND, IND.



Our Way



## SHORT - CUT

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# MILL TO RETAIL

Others' Way



### Wool Square Horse Blankets

FROM MILL DIRECT TO RETAILER.



### Wool Carriage Robes

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Profitable Line

"Easy to sell as Nails."

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### THE BECKMAN CO.

### CLEVELAND, OHIO

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**1000**  
**MILE**  
**AXLE**  
FOR  
**BUGGIES and**  
**SURREYS.**

**CLEVELAND**  
**No 6 $\frac{1}{2}$**   
**CONCORD**  
**EXPRESS**  
**AXLE**  
FOR  
**DELIVERY**  
**WAGONS.**

**STANDARD**  
**ROLLER**  
**BEARING**  
**AXLE**  
FOR  
**HEAVY**  
**WAGONS.**

**Attracting Attention.**

The practical superiority of the three axles sold by us is attracting the attention of the carriage and wagon trade throughout the country.

To-day, the Mather 1000-Mile Axles, the Cleveland 6 $\frac{1}{2}$  Axles, and the Standard Roller Bearing Axles are the most popular on the market.

For the style of vehicle for which they are intended they excel all others.

More of them are sold to-day than ever before.

Manufacturers will find it profitable to use these axles, and dealers who have at heart the interest of their trade should insist on them.

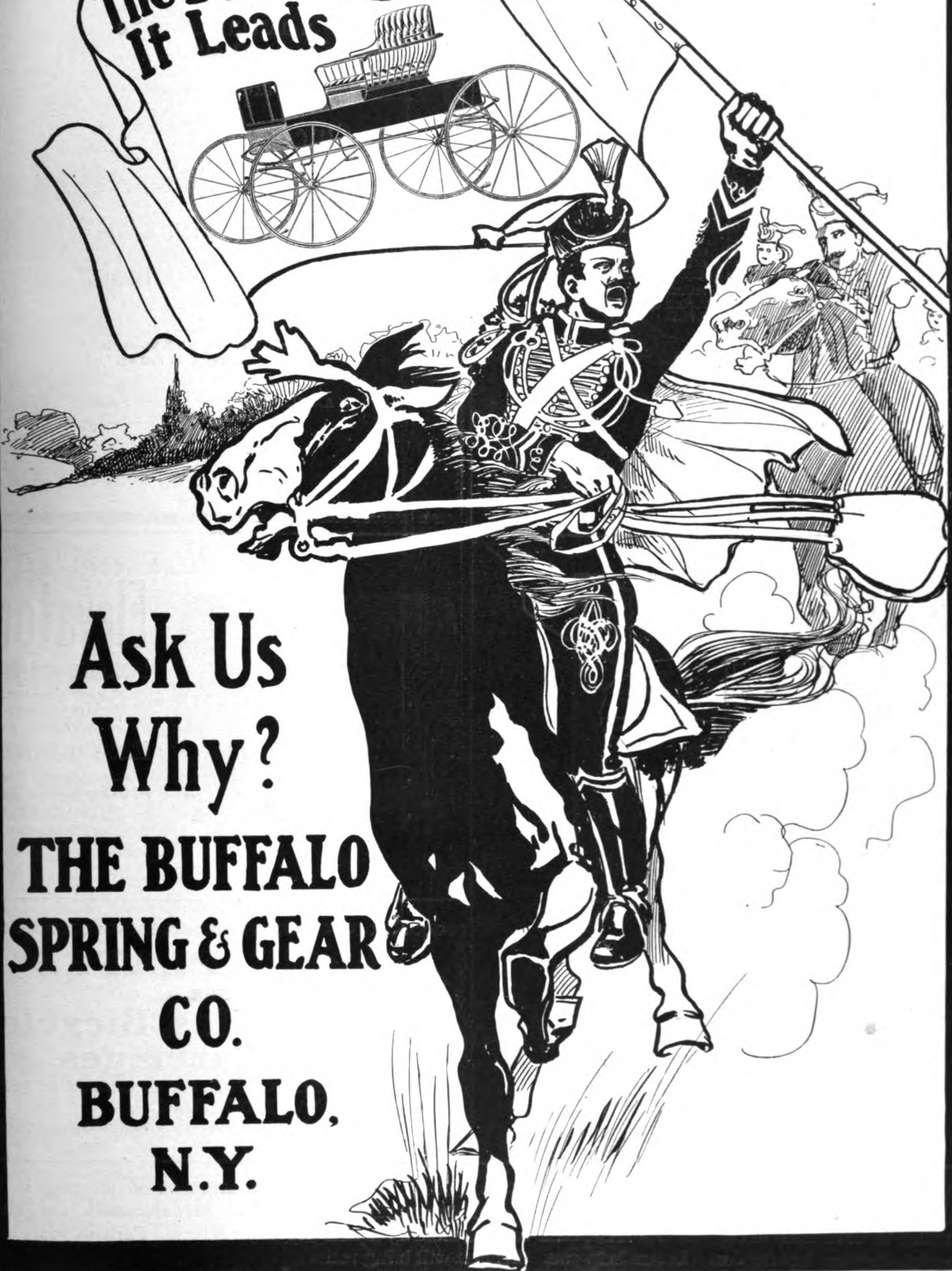
**CLEVELAND AXLE MFG. CO.,**  
**CANTON, OHIO.**

CHARLES AUSTIN BATES N. Y.



# LEADERSHIP

The Buffalo Bike.  
It Leads



Ask Us  
Why?  
**THE BUFFALO  
SPRING & GEAR  
CO.  
BUFFALO,  
N.Y.**



**Big Four**

The  
'Buffalo  
Route'

to



THE  
**St. Paul Road.**

(Chicago, Milwaukee & St. Paul Ry.)

**ELECTRIC-LIGHTED  
TRAINS**

DAILY BETWEEN

**Chicago  
Des Moines  
Sioux City  
Omaha**

All Coupon Ticket Agents sell tickets via  
Chicago, Milwaukee & St. Paul Ry.

F. A. MILLER, General Passenger Agent,  
CHICAGO ILL.

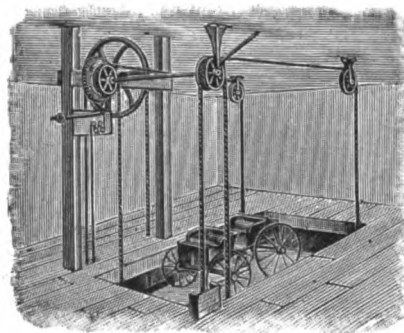
**LIBERTY AUTOBELL**

THIS IS THE ONLY CONTINUOUS  
RINGING CHIME BELL

Very Easy to Operate, and  
the only Bell that will produce  
a Variety of Alarms.

**THE LIBERTY BELL CO.**  
**BRISTOL CONN. U.S.A.**

WRITE US FOR CIRCULAR



**Elevators,**  
Passenger and Freight  
of every description.  
Send for Circulars.

THE  
**Albro-Clem Elevator Co.**  
Main Office and Works:  
**700 Glenwood Ave.,  
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**NAME PLATES**  
FOR  
**Automobiles, Bicycles  
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**N. C. WALTER & SONS, 194 WILLIAM STREET,  
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**HAVE YOU ANYTHING NEW** that you desire to bring to the attention of the trade? Now is your opportunity to push it. Manufacturers are already beginning to order such devices as will make their vehicles more up to date and better sellers. Perhaps yours is just the article they are looking for. Let us help you. Request will bring rates.

**TRADE NEWS PUBLISHING CO., 24-26 Murray Street, New York,**

Please mention "The Hub" when you write.



## Rochester Steam Carriages

Are a line by themselves, distinctive by being superior to all others in strength and features of utility.

**Strictly High Grade.**

Simple, Practical, Durable.

Strong and Handsome.

No torches used in lighting, use simply a match, fire regulated from driver's seat, Pilot Light, Double Acting Brake, Auxiliary Pump, the Engine pumps both air and water, Throttle spring lock, Water column, Carriage locks with key, Double Mirror, Dunlop Tires, &c.



"ROCHESTER RUNABOUT.

Good Agents Wanted, write for particulars.

**Rochester Cycle Mfg. Co.,** Rochester, N. Y.

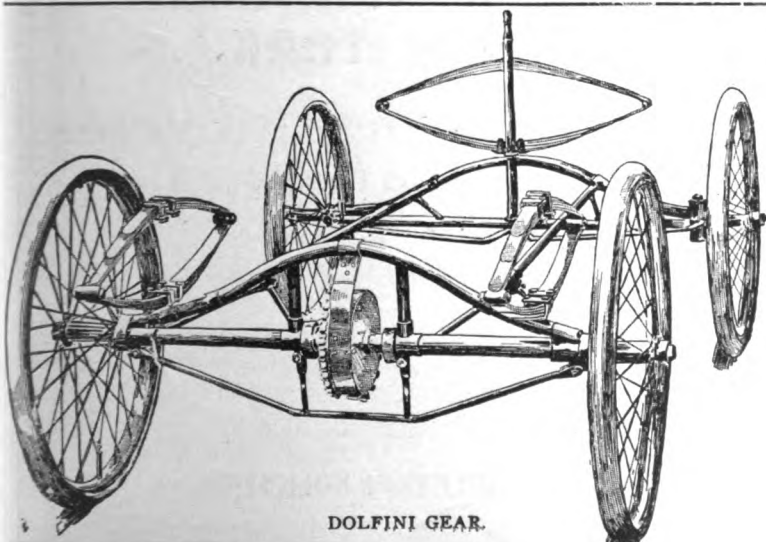
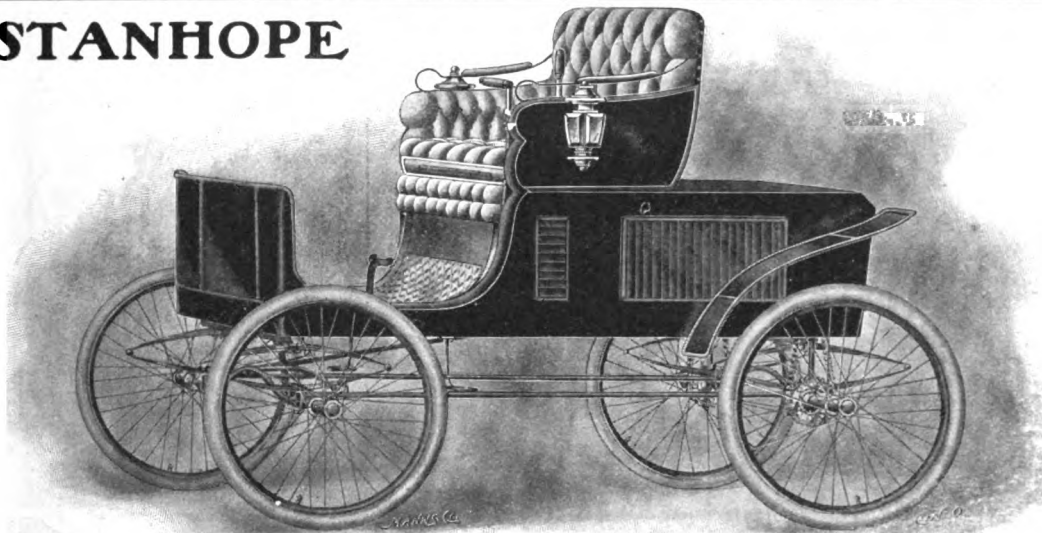
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**"Darling" Automobile.**

Write for Catalogue,  
7 Different Styles.

**The Beardsley & Hubbs Mfg. Co.,**

MAANSFIELD, OHIO.



DOLFINI GEAR.

## Complete Running Gears and Fittings.

SPECIALLY ADAPTED TO THE USE OF CARRIAGE MANUFACTURERS, IN GASOLINE, STEAM OR ELECTRIC VEHICLES

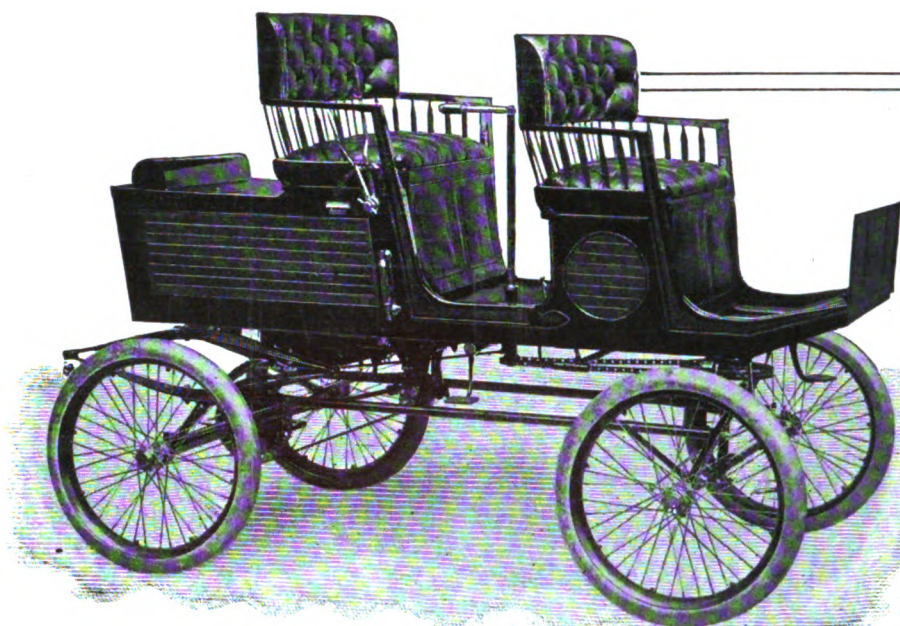
ONLY ONE GRADE..... **THE BEST.**

**Brooklyn Automobile Supply Co.,**

332 CLASSON AVENUE,  
BROOKLYN, N. Y.

Please mention "The Hub" when you write.





OUR UP-TO-DATE

# Surrey.

Will track ordinary County roads. Gasoline tank holds 10 gallons, sufficient for 100 miles of travel, 12 to 18 mile speed.

Superb Hill climber.

Patent Pilot Light.

Forward and backward brakes.

**Milwaukee Automobile Co.**



Steering Knuckle, 1-3 size.

**The Billings & Spencer Co.,** Hartford, Conn., U.S.A.  
Established in 1869.

**Manufacturers of**  
**Drop Hammers, Presses, Forges, Machinists' Tools and Drop Forgings**

of every description and for all purposes. The illustrations show  
**Automobile Forgings** suitable for carriages weighing from 600 to 1500 lbs. which we carry in stock.

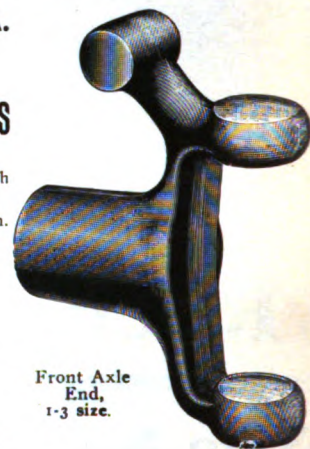
We have ample facilities for the production of **Vehicle Forgings** of every description.  
Specifications will receive our prompt and careful attention.

Estimates made on finished parts.

LONDON OFFICE:

No. 8 Long Lane, Aldersgate St.,  
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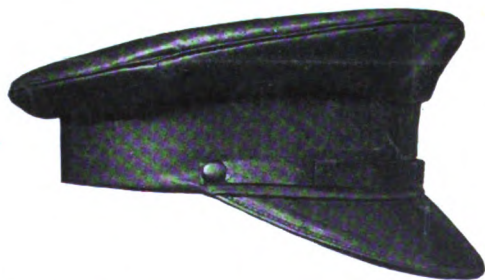
DROP FORGED OF BEST SOFT STEEL.  
ORDERS PROMPTLY FILLED.



Front Axle  
End,  
1-3 size.

## Autosilk Does It. Summer Automobile Caps

LIGHT AS STRAW  
WATERPROOF  
STYLISH



Autosilk does it. It is absolutely new, weather proof and durable. Manufactured exclusively by

**DEMMEERLE & CO.,**

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## THE HERALD SQUARE Automobile Exchange,

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Space offered and facilities provided for storage and care.

Workrooms and offices at low rates.

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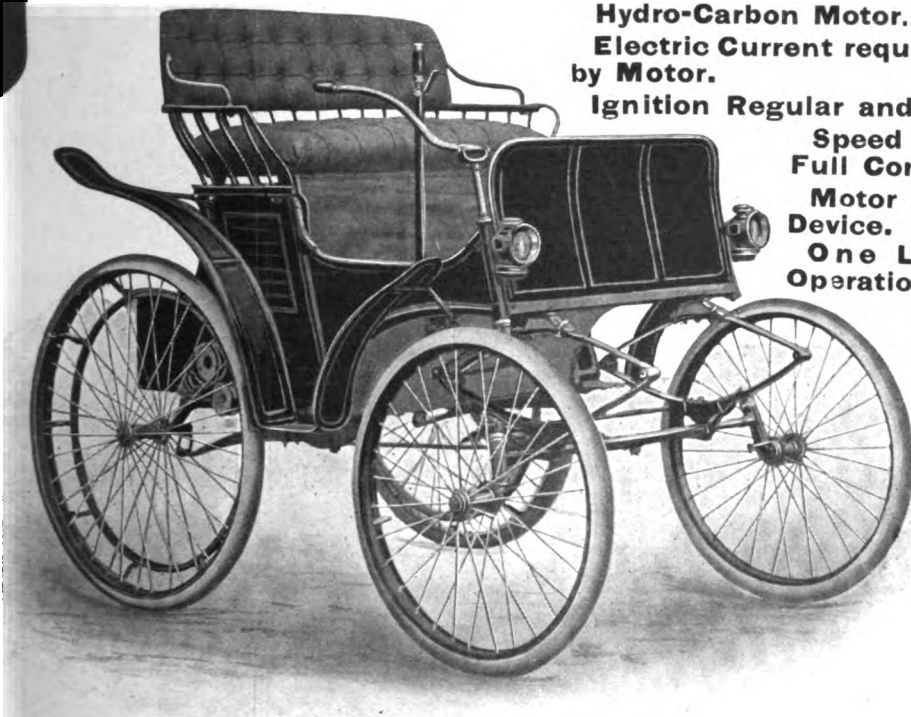
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Supplies in stock.

INSPECTION SOLICITED.



# OAKMAN MOTOR VEHICLE.



Hydro-Carbon Motor.  
Electric Current required for Ignition provided  
by Motor.

Ignition Regular and reliable.

Speed at Will of Operator and under  
Full Control.

Motor Started from Seat by Simple  
Device.

One Lever Controls every Required  
Operation except Steering.

Cost of Operating Less  
than One-Quarter Cent  
per Mile

Free from Odor.

Practically Noiseless.

Very Attractive.

Simple in Construction  
and Durable.

Weight 475 Pounds.

Style No. 120.

**AMERICAN VEHICLE CO.,** MANUFACTURERS.  
45 BROADWAY, NEW YORK.



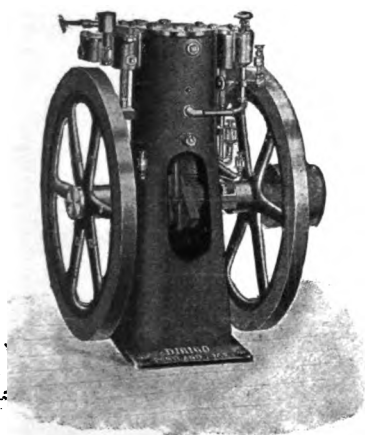
**A Long Distance Wagon for Business.**

BUILT TO RUN 200 MILES WITHOUT REFILLING.  
NO MACHINERY IN THE BODY WHATEVER.

Write for Catalogues of models Nos. 1 and 2

We are looking for a few more good agents.

**Loomis Automobile Co.**  
**Westfield, Mass.**



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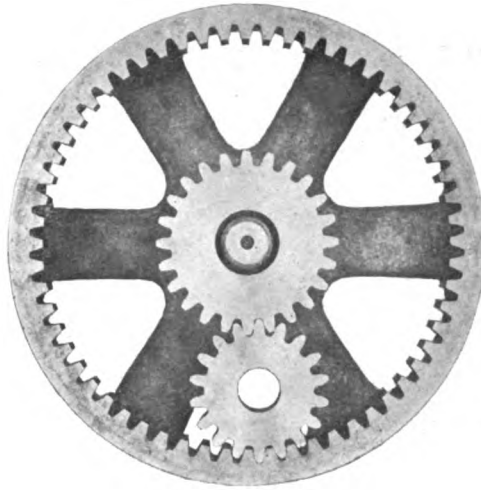
Are simple, durable and reliable ; they are absolutely safe ; shavings, sawdust or any kind of material, if piled all over the u, would not take fire. No exposed flame on them anywhere. They require no attention; can be started in the morning and will run all day, or you can start up a thousand times a day, as it takes but a second to start them, and there is no expense when not working. For a power for the carriage, blacksmith or machine shop, or for any place where power is required, they are the most economical and most reliable. Send for full particulars. H. Dirigo Engine Works, Portland, Maine.

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Nuttall Cut or Planed Spur, Bevel, Mitre and Internal Gears for Automobiles give best satisfaction. Send drawings for prices.



Nuttall Gearing is properly designed and accurately machined. Operates with least noise and friction. Gearing to order for experimental work.

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**NOISELESS  
DURABLE  
CLEANLY  
NO VIBRATION**



Our gears are used for all kinds of geared machinery. They are especially adapted

**FOR THE AUTOMOBILE SERVICE**

and have been adopted by a majority of the leading concerns in this line. Write for our circular.

THE  
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SYRACUSE, N. Y.

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THE NAME "CREST" IS A GUARANTEE.



CAMBRIDGEPORT, MASS.

**CREST GASOLINE  
MOTORS,  
CREST  
SPARKING PLUGS**

EVERYTHING  
FOR AN  
AUTOMOBILE.



## Automobile Gasoline Motors.



Bicycles.

Also Motors for Bicycles  
and Launches.

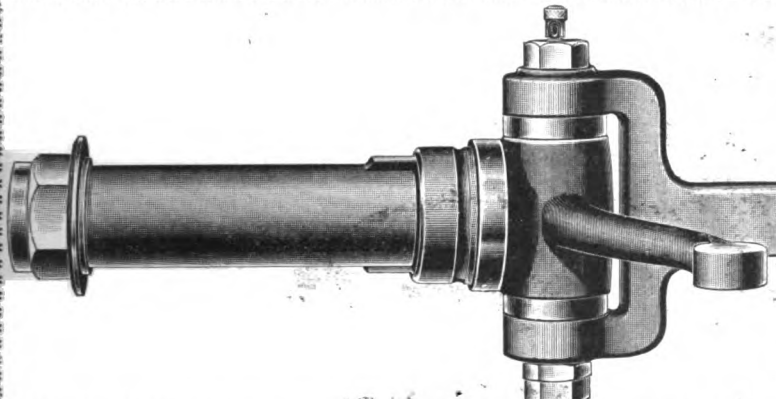
Castings and Working Drawings.

**Lowell Model Co.,**

P. O. BOX 292,

Lowell, Mass.





## DALZELL PATENT

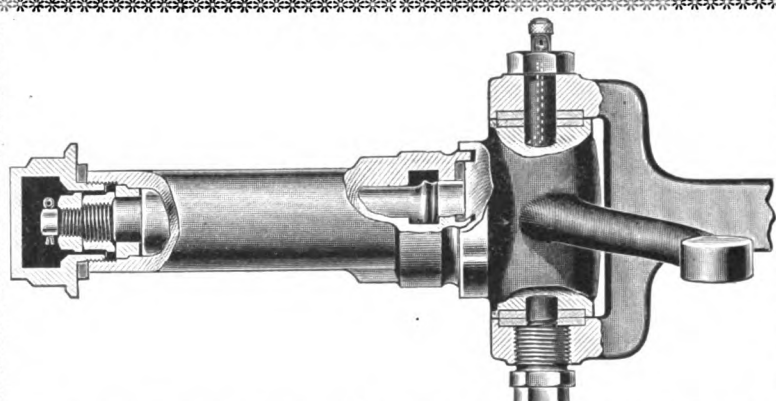
# AXLE

FOR

## AUTOMOBILES.

### Dalzell Axle Co.

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# G & J TIRES

FOR AUTOMOBILES




*Are detachable,  
double tube tires.  
An occasional  
puncture is inev-  
itable in any tire.  
Any one can  
repair a G & J  
Automobile Tire  
easily and  
permanently.*

## G & J TIRE CO.

INDIANAPOLIS, IND.

## *The Oldsmobile.*



**It's a marvel to most people. Runs 40 miles on one gallon of gasoline. Starts from will from seat. Can be operated by the inexperienced. Fully guaranteed.**

*Write for our Catalog.*

### Olds Motor Works,

53 Concord Ave.,  
DETROIT, MICH.





FACTORY OF THE MOBILE COMPANY OF AMERICA. VIEW LOOKING SOUTH.

## THE "MOBILE" A CARRIAGE FOR EVERY-DAY USE.

ON June 10th, four "Mobiles" started in the middle of the afternoon from the factory of The Mobile Company of America at Kingsland-Point-on-the-Hudson and ran to West Point, reaching the ferry at Garrisons in time for the 5:15 boat. Two hours and a half were spent in running about the Military Academy roads, then, after dinner, the four carriages started home by moonlight. The road from Kingsland Point to West Point is hilly, with many steep gradients scattered over its length; but from the State Camp at Peekskill through the Highlands of the Hudson to West Point occur long climbs and very steep and rough roads. The distance traveled was approximately, including the running at the Academy grounds, sixty-five miles. Not a delay or accident of any kind occurred; not a moment's worry to anyone of the eight people who made the journey. The "Mobiles" were in as good condition at the end as at the start—not one, but the entire four—and one of them had come up from New York to Kingsland Point before starting for West Point.

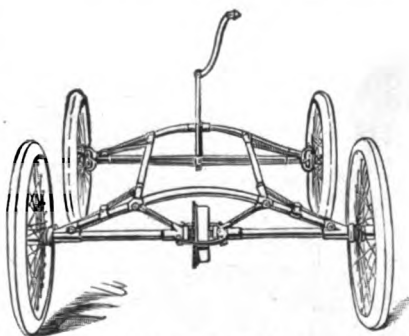
This gives an idea of what the "Mobile" is—a splendid piece of machinery, satisfactory in all its parts, of the best quality and workmanship throughout. Price, \$750. All visitors can inspect every department of the manufacture of "Mobiles." Twenty-five trains stop at Philipse Manor, the station on the company's grounds.

For information regarding "Mobiles" address

**THE "MOBILE" COMPANY OF AMERICA,**

PHILPSE MANOR STATION, TARRYTOWN-ON-THE HUDSON, N. Y.

## Automobile Running Gears.



We make a specialty of gears suitable for Gas, Steam or Electric power. Our gears have been in use with good results to buyers. They are adapted for all classes of road work without straining.

**Side or Centre Steering.**

**SIMPLICITY, SPEED, SERVICE.**

**READING AUTOMOBILE & GEAR CO.,**

10th and Exeter Streets.

READING, PA.



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of all sizes  
for . . .

**Motor Carriages,  
Buggies, Etc.**

**Bevin Bros. Mfg. Co.,**  
East Hampton,  
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## NAME PLATES

—FOR—

**Automobiles, Bicycles and Carriages.**

Steel stamps, letters and figures, the very best hand cut work at reasonable prices.

**SEND US A TRIAL ORDER.**

**WE GUARANTEE SATISFACTION.**

Our letters and figures are of new pattern (see cut), are heavy and strong, and will outlast three of the regular sets. . . .

**The CHANDLER CO.,**  
SPRINGFIELD, MASS.

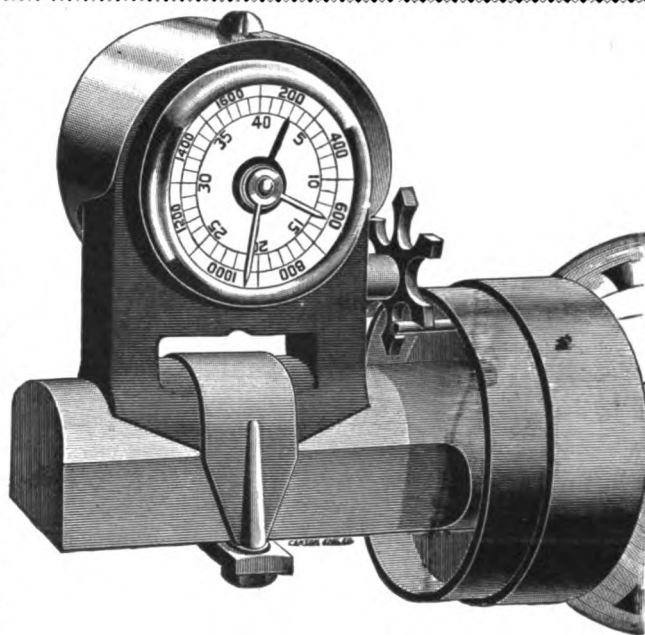
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# The Picturesque Route



**of America**  
**Between East and West.**  
 New York, Buffalo, Niagara Falls,  
 Cleveland, Cincinnati, Chicago.



## THE IMPROVED BELL ODOMETER

attached to your automobile or carriage, will give you the exact distance traveled, and announces each mile passed by the stroke of a bell.

Send for circular H.

**S. H. DAVIS & CO.,**

Cor. Portland & Sudbury Sts., BOSTON, MASS.



**I**n recognition of the importance of the industry established by The "Mobile" Company of America at Kingsland Point-on-the-Hudson, the New York Central & Hudson River Railroad has established a station at the factory of The "Mobile" Company with a service of twenty-five trains a day.

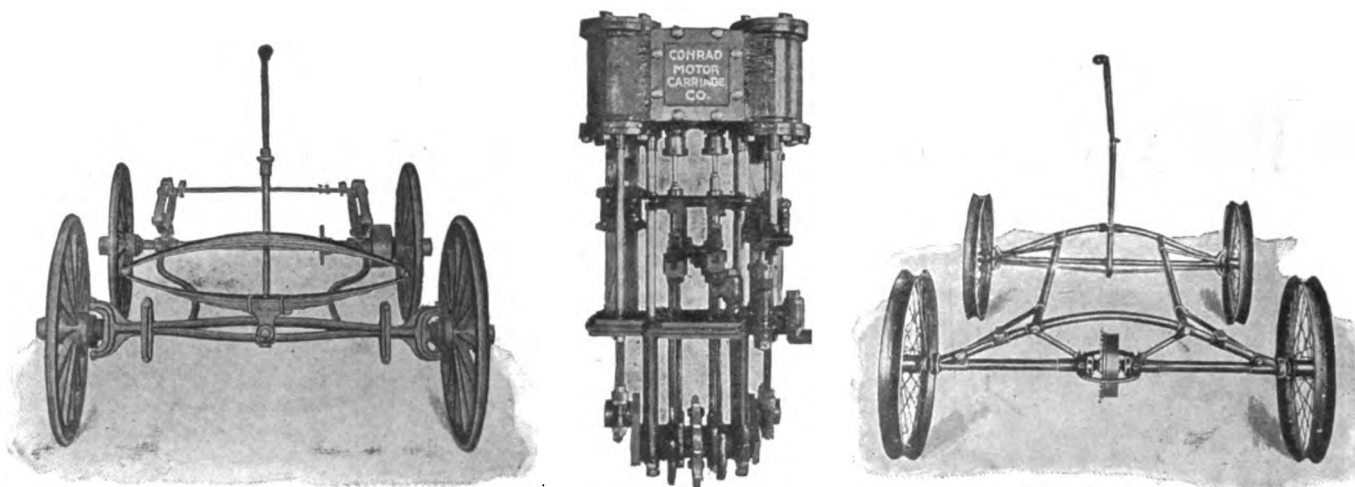
The original Philipse Manor, two hundred and twenty years old, still stands on the company's property, and the railroad company has appropriately, in view of its historical and literary associations, given this name to the station. The run from the Grand Central Station in New York is one hour. The manor house and old mill and Sleepy Hollow are part of the company's property, connected by the Headless Horseman's Bridge. The old Dutch Church, and Washington Irving's grave and the monument marking the spot where André was captured, are in the immediate vicinity. When you visit New York, you will find a trip to the factory of

### THE "MOBILE" COMPANY OF AMERICA

quite worth a half day's outing. Kingsland Point itself is considered to be the most beautiful section of the Hudson. The visitor is looked after by The "Mobile" Company's corps of demonstrators, taken for a ride in a horseless carriage, and shown all the different processes which enter into the fifteen departments required to manufacture a horseless carriage. He may inspect both quality of material and workmanship, see the new carriages tested as they are taken from the works one after another, and have every opportunity to satisfy himself of the excellence of the carriage in every particular. Price, \$750 Complete.

**THE "MOBILE" COMPANY OF AMERICA, Philipse Manor Station, Tarrytown, N. Y.**





# AUTOMOBILE

Engines, Boilers, Running Gears, Differentials,  
Running Gear Frame Fittings, Rough or Machined.

**STEAM DELIVERY WAGONS.**

**STEAM STANHOPE.**        

**STEAM RUNABOUTS.**        

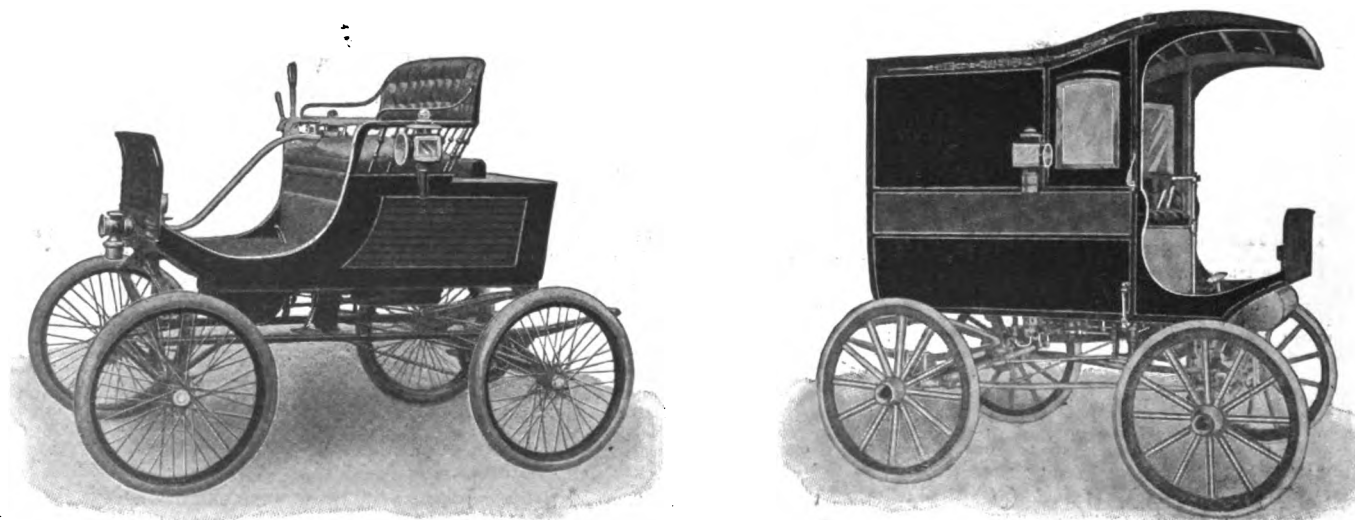
Carriage Builders, build your own Automobiles. We can furnish you the parts, together with blue prints, and all necessary data, for piping up and assembling your first jobs.

Our Steam Carriages are running successfully, and have all the latest improvements.  
Catalogue on application.

## THE CONRAD MOTOR CARRIAGE CO.,

1417 NIAGARA STREET,

BUFFALO, N. Y.

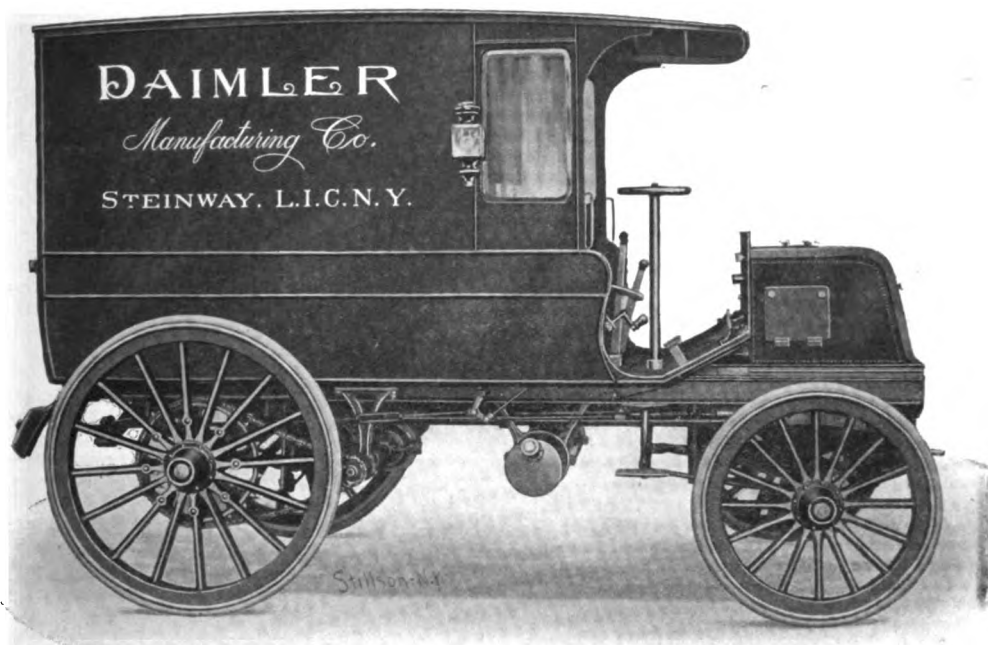


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# THIS IS THE WAGON

**That Ran 100 Miles at  
an Average Speed of  
9.4 Miles an Hour. —**



## NOT ON PAPER

but in the 100 mile endurance test of the Long Island Automobile Club. The Daimler was the only delivery wagon entered in the contest, perhaps because it is the only one built that could finish.

**YOU NEED THIS KIND IN YOUR BUSINESS**

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# Daimler Manufacturing Co.,

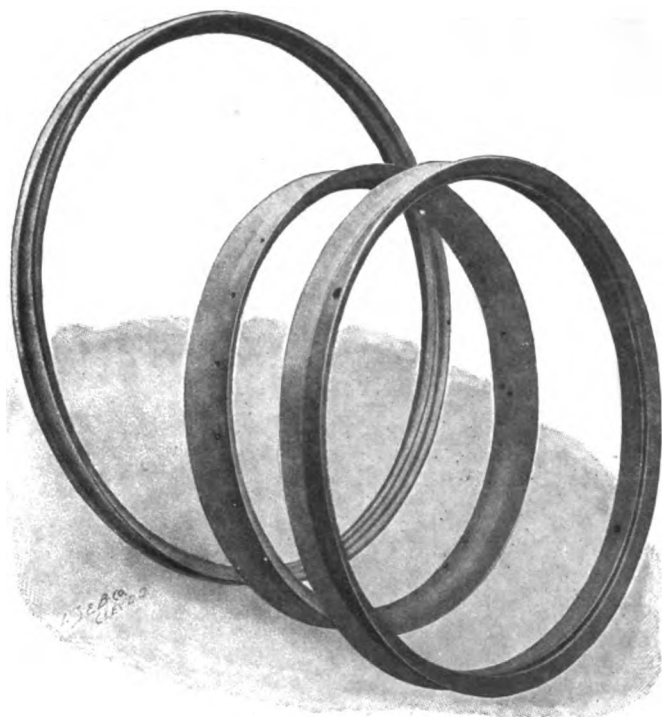
**939 Steinway Avenue,**

**LONG ISLAND CITY, N. Y.**

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# STEEL RIMS



## CRESCENT AND DROP CENTER PATTERNS.

Sizes – From  $1\frac{1}{4}$  inches up to 4 inches in section ;  
from 28 inches to 5 feet in diameter.

WE ALSO MANUFACTURE

## SHEET STEEL MUDGUARDS.

Blue prints on application.

Vehicle cups for ball bearings, taking from  $\frac{3}{8}$  inch  
to  $\frac{3}{4}$  inch balls.

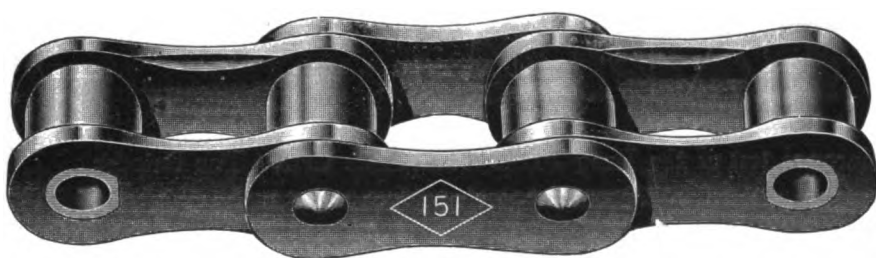
For further information apply to

**The Automobile and Cycle Parts Co.**

**SMITH STAMPINGS FACTORY,**

**Milwaukee, Wis.**

## AUTOMOBILE CHAINS.



### No. 151 "Diamond" Automobile Chain.

Pitch,  $1\frac{1}{2}$  inches ; width,  $\frac{1}{2}$  inch ; diameter of rollers,  $\frac{5}{8}$  inch ; thickness of sides, .125

This pattern has polished straw tempered hard rollers, hard steel bushings (not split), hard rivets, full polished blue 8 sides "chanfered." Its tensile strength is 6,500 pounds.

We have been making chains, and nothing else, for nine years. Our factory is exclusively equipped for chain manufacture. It is the largest chain plant in the world.

The characteristic qualities of "Diamond" Chains are accuracy, strength, uniformity and finish. Prices on application.

**THE AUTOMOBILE AND CYCLE PARTS CO.**

**DIAMOND CHAIN FACTORY**

**INDIANAPOLIS, IND.**



## Tool Steel Balls.

We have the largest and best equipped plant in the world devoted to the manufacture of hardened and polished tool steel balls. The steel used is made expressly for us and is the result of a long and exhaustive series of experiments which have resulted in producing a uniformity of hardness, toughness and wearing qualities never before attained.

Our regular stock line consists of Tool Steel Balls in sizes from  $\frac{1}{8}$ " to 4" in diameter. We can grind balls to any of the intermediate sizes at special prices which will be promptly quoted upon application. Can also furnish balls in Bessemer steel, brass, bell metal, etc.

**The Automobile and Cycle Parts Co.,  
CLEVELAND BALL AND PEDAL FACTORY,**

**CLEVELAND, OHIO.**



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# The Hub

(THE HUB NEWS.)

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No. 3

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E. R. SHAW, *V.-P. and Western Representative.*

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THE HUB is published monthly in the interests of employers and workmen connected with the manufacture of Carriages, Wagons, Sleighs, Automobiles and the Accessory trades, and also in the interests of Dealers.

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## FOREIGN REPRESENTATIVES.

FRANCE.—L. Dupont, publisher of *Le Guide du Carrossier*, 78 Rue Boissiere, Paris. Subscription price, 15 francs, postpaid.

GERMANY.—Gustave Miesen, Bonn a. Rh. Subscription price, 12 marks, postpaid.

## Slaughter of the Innocents.

NEVER was there a time when the vocabulary of carriages was so slaughtered as at the present. A name that had a meaning at one time and by continued use became so closely identified with the vehicle that it stamped its character is now made to do duty everywhere, providing it sounds well. One of the oldest names is the "Stanhope" cart, or phaeton, as the case may be; but the name determined a pronounced point in the construction. Now "Stanhope" means nothing with a majority of builders, and without an illustration the buyer would be much disappointed on receiving the supposed "Stanhope" ordered by him. "Runabout" is another catch name and it is applied indiscriminately to huggies with or without tops, square and drop front bodies. Gig bodies on four wheels or to any other style. "Surrey" comes in for its share of incongruities; a man may order a surrey and get a phaeton, or a phaeton and get a surrey. Other established names share the same fate. Wholesale manufacturers are the chief offenders, and it sometimes looks as though the naming was left entirely to chance or was in the

hands of some stupid manager whose knowledge of vehicle nomenclature was confined to the wheelbarrow, farm wagon and dump cart. The fact is that a half dozen illustrated catalogues put into the hands of a non expert in carriages would so befog him that he would not dare to order a carriage by name. The whole matter is the result of rank carelessness. Every builder should have an established rule and an acknowledged list of names convenient in his office, and when making out his list for his catalogue follow the acknowledged cognomens with such prefixes as he might favor in order to give distinctive appellation to his products.



## Export Possibilities.

WHILE the export of wheeled vehicles has increased during the past three years, it has not kept pace with that of many other manufactured products, and it is in order to remind our manufacturers of the fact that exceptional conditions exist and that unless they embrace them manufacturers in other countries will. These conditions were brought about by the same cause, war! but one is due to devastation, as in South Africa, the other to the establishing of a new order of things, as in the Philippines. All accounts agree in the fearful destruction of wagons from the Boer war, and before the Boer farmer can again place his home and farm as it was before the war, he must have wagons or carts for transportation, even if he does not have pleasure vehicles, and no vehicle manufacturers are as well prepared to furnish these as are ours. Then, too, there will be a greatly increased demand for materials. Our present South African trade is not inconsiderable, but it can be increased and should be. One of the largest of our shipping and commission houses is about establishing headquarters in South Africa, and will without doubt be on the alert to capture trade for American manufacturers. A push in that direction will mean much for future trade. In the Philippines conditions are different; the wagon there will be the avant-courier of western civilization. Our people are in the field with the army wagon, and owing to American control and superiority of product, should capture and hold the trade for years to come. If we do not the fault will be ours, but it is well to remember that other countries will contest the field, and that being under American control will not insure us the trade. We must fight for it if we get and hold it. The nation that gets the first hold will be the one that will reap the greatest benefit in the future. Our great export trade in manufactured goods is the reward for hard and persistent effort, and to retain it we must work with the same zeal as we did to get it. Our worst enemies are those of our own people who make statements that tend to depreciate our own products, on the ground that the quality



is being lowered, when the real fact is that the sharp competition in our own market is compelling manufacturers of all grades to improve upon construction and finish. The only point in manufacturing which interferes with our export of carriages is lightness of construction. The foreign buyer cannot understand how a carriage can be made light and strong, and it is folly to attempt to convince that trade by insisting upon sending such light vehicles; heavy wheels and axles are demanded and should be delivered, no matter what our trade calls for. These remarks apply to what we term family carriages, not to broughams, coaches, farm or freight wagons. The series of articles published in *THE HUB* during the past year or more have furnished the carriage trade with much valuable information regarding opportunities for trade in foreign countries, where vehicles of various kinds are in large demand, and where the supply is mainly imported from Europe. These countries, together with South Africa and the Philippines, offer opportunities never before presented to the carriage trade.



### As Was to Be Expected.

ALREADY foreign carriage journals are republishing the article from the *Carriage Monthly* of April, in which that journal states that there has been a decline in the manufacture of fine carriages in this country. *THE HUB* took exceptions to the statement in the May issue, but it is not to be expected that foreign carriage papers will give such publicity to our statement as they will to that of our contemporary, as the latter is in their interest. American manufacturers are making serious inroads in foreign countries, and the people in those countries, who feel the effects of our competition, will gladly welcome any statement made by an American carriage journal that degrades the American carriage. The English, French and German builders will be quick to inform their customers throughout the world that an American carriage journal states in substance that American carriages are of poor quality. No more serious assault has ever been made upon the carriage industry of America than the one published by our contemporary, a statement that is totally opposite to the actual conditions, and *THE HUB* reiterates the statement that never were there so many good carriages built and sold in the United States as there were in the year 1900, and that the products of the American carriage factories as a whole are not equaled by those of the factories of any, or all, foreign countries, in style, finish, or wearing qualities.



### Catalogue Houses.

IF the carriage dealer was the only man who had to meet the competition of the catalogue house there might be some way by which this competition could be controlled, but unfortunately the catalogue house reaches out into every industry and to an extent in many that is far more injurious than in the carriage trade. Each individual industry has had its fight with the "Cat" house, and so far no headway has been made toward lessening their competition. Nor is there likely to be so long as these houses conduct an honest business and pay cash for their goods. The carriage manufacturer, no more than any other, is proof against a cash offer for his goods, particularly at a time of the year when the regular trade is small and when there is a fair margin of profit, for it must not be supposed that the catalogue house

buys at lower prices than any other cash customer, even though selling prices are lower. The carriage dealer cannot conduct his business on the same percentage of profits as are accepted by catalogue houses. The dealer is compelled in a measure to become the sponsor for the vehicle sold and must make good claims made by his customer. The catalogue house sells at a narrow margin of profit, but when the sale is made, which is for cash, his interest in the transaction ends; he does not warrant his goods and neither he nor the manufacturer ever hears more of the carriage, no matter how unsatisfactory it may be, and the buyer has no recourse, and just so long as there are men in the community who will pay cash and be satisfied without a warranty, providing they can buy below regular market rates, so long the catalogue house will flourish. Attempts to boycott, blacklist or taboo the manufacturer in any way will not avail. It is human nature to protect oneself, no matter how much we may rail at the man who sells his goods to a cash customer; he has the right, and we may well ask that you put yourself in his place. We believe more can be done by cash buying, cash selling and strict attention to business, seeing that customers pay no more than fair rates and that fair treatment be accorded to them than by railing at the man who does a legitimate business and deals honestly, even if he runs a catalogue house. He has the right to conduct his business in his own way, even if he differs from you in his methods, and your only course is to meet him fairly and contest for supremacy by adopting his best methods, protect your customers and make friends of the manufacturer by meeting your obligations promptly. A certain carriage manufacturer, speaking of catalogue houses, said: "I have sold thousands of dollars' worth of carriages to so-called catalogue houses and never lost a cent. During the same time I have lost nearly \$10,000 by granting credits to dealers with small ratings, one of my heaviest creditors, one from whom I am not likely to get 10 cents on a dollar, caused me to be blacklisted for selling to a house that carried enough carriages to be entitled to be rated as a dealer; but that was termed a 'Cat' house." This experience is common to all lines of manufactures and does not apply to the carriage trade only; and all efforts to change the matter have failed. The catalogue houses continue to supply the cash buyer, who is on a lookout for bargains, and the feeling is growing that the catalogue house will remain and will gather in a share of the business unless buyers can be taught that the small gain they make in the first purchase is more than offset by the repair account that they—not the seller—must meet.



### Still Teaching the Old Fable.

IN the April number of *The London Coach Builders' and Wheelwrights' Art Journal*, a short account is given of a lecture before the Technical Classes at Manchester, England, by Mr. Maddock, in which the lecturer says: "The gradual development of the tree by the transmission of the sap, the blood of the tree, to bark, and sap-wood, and finally to the hard working material. This process takes place every year, and forms the annular rings." Judging from what was published the lecturer was well prepared and interesting, but why the lecturer, who, we are told, has made timber the study of his life, should repeat the old fable regarding "annular rings" we are at a loss to understand. Possibly none of his class had an interest in the growing of timber and they would not have



gainsaid it, if the lecturer had said that each ring was the growth of a decade, or any other period of time, but there can be no excuse for the lecturer allowing himself to be guilty of aiding to keep alive the ridiculous idea that these rings mark definite and arbitrary periods of time, he might as well say that years add a defined number of lines to the human face, and that a man's age can be told by these lines. Instead of these rings marking the growth of a year they more likely indicate growth periods of two or more in a year, or they may be the result of some entirely unknown cause. The beet and most, if not all, roots show these rings, more clearly defined in the beet and turnip than in any other, but they are there, and the more vigorous the growth the more numerous and well defined are these layers, a dozen or more may exist in the one root, which may have had but five months of growth from the seed to the matured vegetable. If these annular rings in the wood indicate a year's growth each, then the tree dies just so soon as it ceases to put on wood. This is in direct opposition to nature's laws. These laws, in all other cases, have a growing, ripening and decaying period, and there is nothing to disprove this in the case of trees except the old fable of "annular rings." We prefer to accept Dryden, when he says of the oak:

"The monarch oak, the patriarch of the trees,  
Shoots rising up, and spreads by slow degrees.  
Three centuries he grows, and three he stays  
Supreme in state; and in three more decays."



## America's Low Priced Carriages.

THE introduction of woodworking and other machinery in the early seventies created a wonderful revolution in the carriage industry of the United States, and many of the present day are disposed to date the production of low-priced carriages to that time and that because of this machinery the quality of the low grade work has depreciated, while the facts are the low grade work of to-day has better wearing qualities than those of the same class built in the early sixties. This railing at low grade work is folly. While artistically and mechanically it has nothing to recommend it, yet it has made and is making carriages possible where without it none would be used. It also serves as an educator and is a salesman for better grades, as the man who has enjoyed the pleasures of a carriage at a very low cost will not give up that pleasure, and will buy a better vehicle just so soon as his ability permits. So much then in favor of these low-priced wagons from the standpoint of availability and their right to be considered as holding a legitimate position in the carriage industry. The construction of this line of work shows no evidences of skill or genius except in the office department of the factory, where by systematic study, cost has been reduced to a figure that will astonish manufacturers of better work. Now that the cost end of the line has been so thoroughly studied, it should be the manufacturer's aim to take up the construction in detail and learn whether changes can be made that will improve the quality without adding to the cost, and there are many points that may be looked into with advantage. First there is style and proportion. It will cost no more to make a body of given pattern so as to maintain its best features than to make the same body otherwise. So, too, with correct proportions; these can be had without adding a penny to cost. Then there is the trimming department. Labor is the prime element of cost, and yet time is wasted in the attempts to produce a fancy squab, back or cushion, while the quality of the cloth is sacrificed to counterbalance the labor cost, whereas a little more money in the cloth and a plain but more substantial style of squab, etc., would give better results, without increasing expense. We refer to the above points as showing what might be done, and suggest to manufacturers that they give attention to these and other details, believing that by so doing they can serve their customers better, and in the end will hear fewer complaints from dealers. Manufacturers of popular grades have worked on the lines here suggested and have greatly improved the quality of their work without increasing prices.

## Description of Latest Styles.

### OUR SLEIGH DESIGNS.

As has long been the custom of THE HUB, we give in this, our June number, several designs of sleighs, in which we have adhered closely to the practical, serviceable vehicle, at the same time not overlooking the fact that the sleigh, more than any other vehicle for pleasure, admits of highly ornamental treatment. These annual contributions serve to aid sleigh builders who provide mainly for the retail trade to a greater extent perhaps than they do the wholesale manufacturer; but as the latter endeavors to put out a few new styles each, as feelers, he, too, can make use of these, as studies, when making up new designs.

Each succeeding winter finds the sleigh industry more and more circumscribed as to the territorial limits of sleigh riding, and as a result the growth in consumption comes from the increase of population in the North and Northwestern States. The short sleigh season in New York City for several succeeding winters, has made sleigh building by local manufacturers unprofitable, and has removed the incentive to venture the output of expensive sleighs as was the case years ago. This condition exists to a great extent in other Eastern cities, and in Southern cities lying north of the thirty-ninth parallel, and dealers depend in a great measure upon wholesale sleigh manufacturers for their supplies of high grade as well as the lower grades of sleighs. The builders therefore each year select from those styles, such as proved sellers the year previous, and include them in their regular lines, and in this way keep the market well supplied with fresh designs, and the most popular styles, as well as standard patterns and grades. Owing to this condition of affairs, the demand for something new in the sleigh line is limited, and THE HUB can best serve its patrons by giving a few fresh designs, followed by such information as regards painting, as will prove of interest and value later in the season.

### SPEEDING CUTTER.

Scale,  $\frac{5}{8}$ -inch to the foot.

(See Fashion Plate No. 508.)

THE demand for speeding vehicles has extended to sleighs and we present to our readers a design that tallies well with the ideas now prevailing for wheeled speeders. Strength and lightness are the cardinal requisites. These can be had only by the use of the best material and by careful workmanship. In this every part is plain and simple. Each pair of knees and the beam are bent in one piece, of the finest hickory. The entire under side is plated with thin steel, doubled in thickness at the T's, which give the necessary support at the runner. The braces, which are straight, are of oval iron, the feet being constructed to take one bolt and one wood screw. The braces are clipped to the knees. The draft eyes are placed on the top of the front beam. The body is a Portland pattern with an extension back of the seat. The body is 13 inches wide on the bottom, 19 inches on the seat rail and 21 inches at the top of the arm. The dash is 18 inches wide at the top; track, 42 inches.

*Painting.*—Body, cream color or vermilion; gear, vermilion; iron-work black; no striping on body or gear. Trimming: Plush or Bedford cord.

### CANADA—OLD COMFORT.

Scale  $\frac{5}{8}$ -inch to the foot.

(See Fashion Plate No. 509.)

THE sleigh shown by Fashion Plate No. 509 is modeled on the general plan of the Canadian solid runner sleigh. The body is given graceful lines while the high back and quarters make the seating comfortable. The front side panels are sufficiently deep to keep the cold away from the feet of the riders. The dash part is perfectly straight and the front panel is grooved in. The top of the dash is finished with a screen and plated rails. The arm rails may be plated,



but they are far more desirable if neatly covered with leather. The slab runners are of  $1\frac{1}{2}$ -inch stock, tapered off on the inside to  $1\frac{1}{8}$ -inch on the head.

*Painting.*—Body, light carmine; moldings, black; runners, dark carmine striped black; bolt-heads, black. Trimming: Maroon cloth.

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#### DRIVING SLEIGH.

Scale  $\frac{3}{8}$ -inch to the foot.

(See Fashion Plate No. 510.)

FASHION PLATE No. 510 illustrates a stylish driving sleigh with a rumble. To provide for the rumble, pump handles are extended back of the main seat; the rumble is secured to these, the risers being concaved and contracted at the seat. The body, which is made up with a stanhope pillar, has a flare of five inches on each side, and a fullness of one inch. If the body is framed up the stanhope and front side panel on each side are of one piece. If a solid side is used, the stanhope is designated by moldings. The ironwork knees have an easy and graceful sweep and are well stayed by straight braces.

Width of body on the bottom, 26 inches; at arm rail, 36 inches; width of rumble, 19 inches; track, 3 ft. 6 in. Trimming, cushions and back dark green cloth; rumble seat, panel painted or lined: plain cushion, green plush; rails plated; handle parts, leather covered pompons on dark black. The dash is finished at the top with a wire screen panel.

*Painting.*—Body panels and rumble, willow green; panel on stanhope pillar and risers to rumble, vermilion; moldings, black; pump handles, vermilion; ironwork, black.

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#### PHYSICIAN'S SLEIGH.

Scale  $\frac{3}{8}$ -inch to the foot.

(See Fashion Plate No. 511.)

FASHION PLATE No. 511 shows a very good pattern of sleigh for physicians' use. The body is deep and closed, the seat large and comfortable, the runners low and strong, the top full size, phaeton type. The body is 30 inches wide on the bottom, 31 inches at the seat frame. Seat, 36 inches long on the bottom and 42 inches at the top; track, 3 ft. 10 in.

*Painting.*—Body, dark green moldings, black, fine lined red; runners, carmine; ironwork, black. Trimming, dark green cloth throughout; squab cushion and back and trim quarters plain, with pockets.

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#### SIDEBAR WAGON.

(See "Latest Styles.")

PLATE CXXXIX. shows a very popular light vehicle, although one that is far less attractive than many other styles of driving wagons. The harness shown represents one of the heaviest styles used for this class of buggies. It is too heavy to appear well, but was used very much last season. As will be noticed, there is no check nor breeching.

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#### LADIES' PHAETON.

(See "Latest Styles.")

PLATE CXL. shows a ladies' phaeton with rumble, the body having a straight sill and very deep seat, hung off in platform gear, the rumble being very low. The harness light coach, long tug, and full coach bridle. Pole chains are used, but straps would have been in better form.

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#### DEMI-MAIL PHAETON.

(See "Latest Styles.")

PLATE CXLI. illustrates a demi-mail phaeton, a popular style of heavy driving carriage. The seat is very deep, and the rest back

high. The trimming, as will be seen, is plain up to the rest back, which is squabbed. The top is provided with large wings. The harness is a heavy long tug coach, heavy bridle and plain check.

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#### SPEEDWAY ILLUSTRATIONS.

(See "Latest Styles.")

PLATES CXLII., CXLIII. and CXLIV.

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#### A BRAZILIAN HEARSE.

(See "Latest Styles.")

PLATE CXLV. represents a Brazilian hearse, built by Ch. Rohe, carriage manufacturer, of Rio de Janeiro. The illustration is reproduced from a print in *Le Guide du Carrossier*, produced by that journal from an original photograph, and it gives a pretty good idea of the lavish expenditure of money, by the wealthy people of Rio de Janeiro, in the burial of their dead. The great feature is the profuse carvings, which emphasize the prevailing tradition of that country, that the bodies of deceased children are accompanied by angels from the door of the home to the grave. On the dome on each side festoons of flowers and wreaths of immortelles are supported by angelic figures. The usage in that country is to paint all children's hearses in scarlet. Mr. Rohe departed from that custom and painted this hearse white, with the exception of the figures and the flowers, the figures being painted flesh color, and the flowers in natural colors. The dome is painted sky blue, studded with stars. The wood used for the carvings is cedar. The hearse is a Brazilian product, the axles only being imported from France. Its value is about \$3,750.

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#### BUSINESS WAGON.

(See "Latest Styles.")

PLATE CXLVI. shows a business wagon built by Luther M. Wright, of South Norwalk, Conn. This wagon has a revolving curtain, with three hundred and sixty-five square feet of space for advertising. The curtain revolves when the wagon is in motion. The total length is 13 ft.; height, 6 ft.; width, 3 ft. 4 in.

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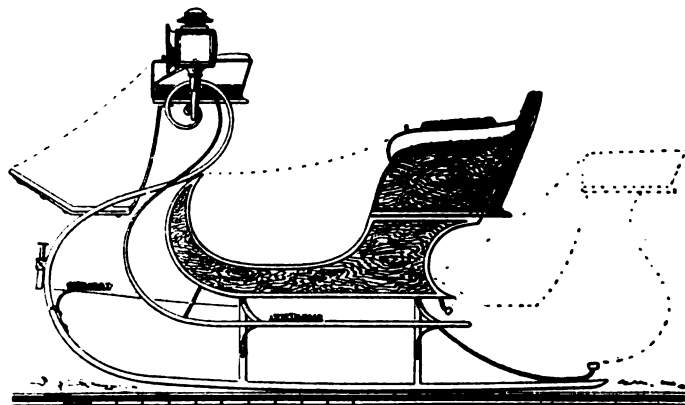
#### ONE HORSE DRAY.

(See "Latest Styles.")

PLATE CXLVII. This plate illustrates a convenient and serviceable one horse dray, manufactured by the Auburn Wagon Co., Martinsburg, W. Va., which, while light enough for one horse, is strong enough for two horse loads. The platform is 36 inches from the ground. This is made in three styles, and is furnished with removable sides. For general hauling it fills all the requirements.

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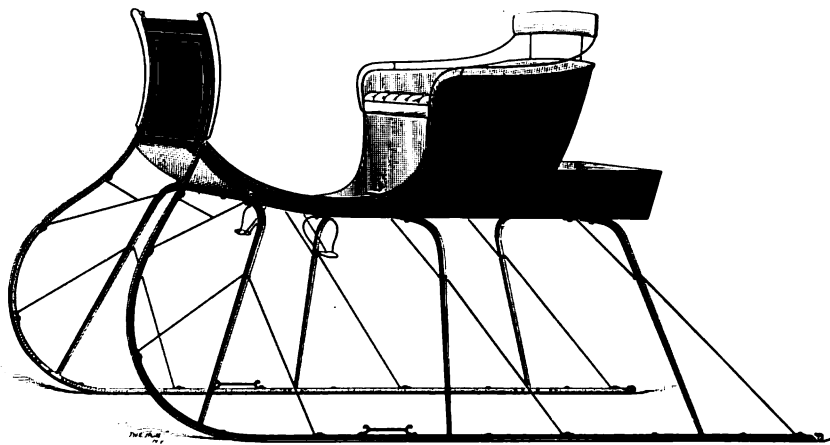
#### A GERMAN SLEIGH.



THE above illustration is from a German exchange. The pronounced feature is the arrangement of the extra seat, which can be used for a driver at the front or for a rumble. This suggestion appears practical and its publication may lead to some such a changeable seat on these lines.



## Latest Styles. June, 1901.

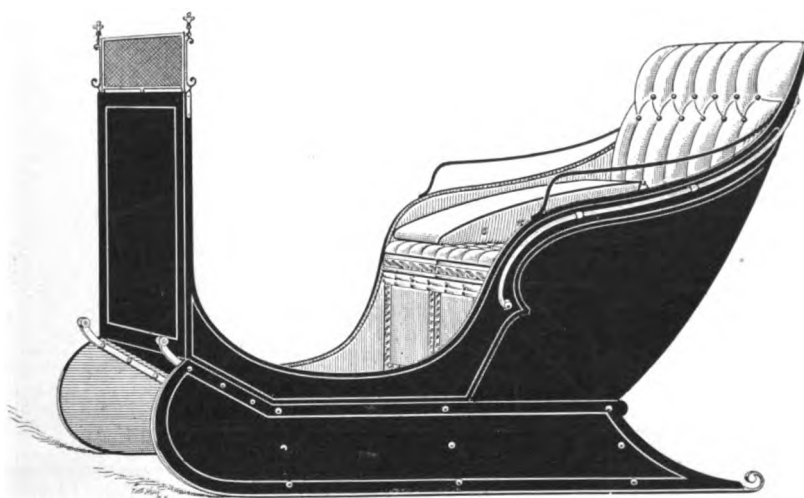


No. 508. Speeding Cutter.

SCALE,  $\frac{5}{8}$  INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.25.)



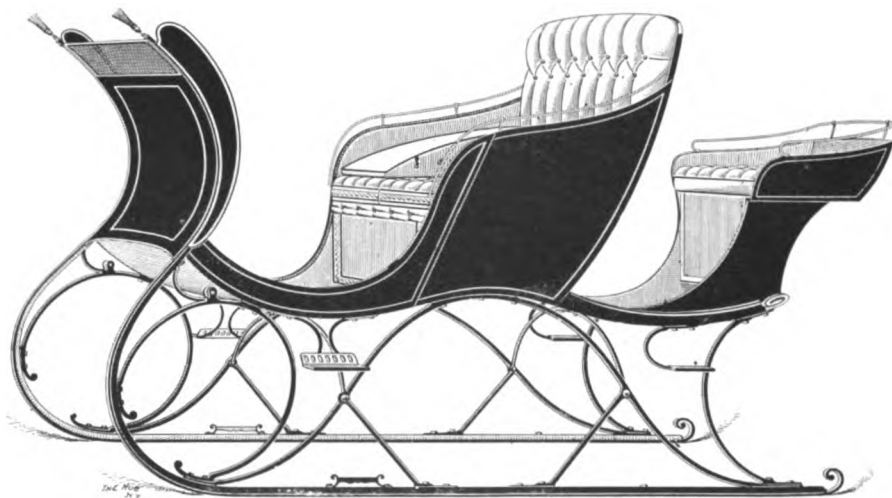
No. 509. Canada—Old Comfort Sleigh.

SCALE,  $\frac{5}{8}$  INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.50.)



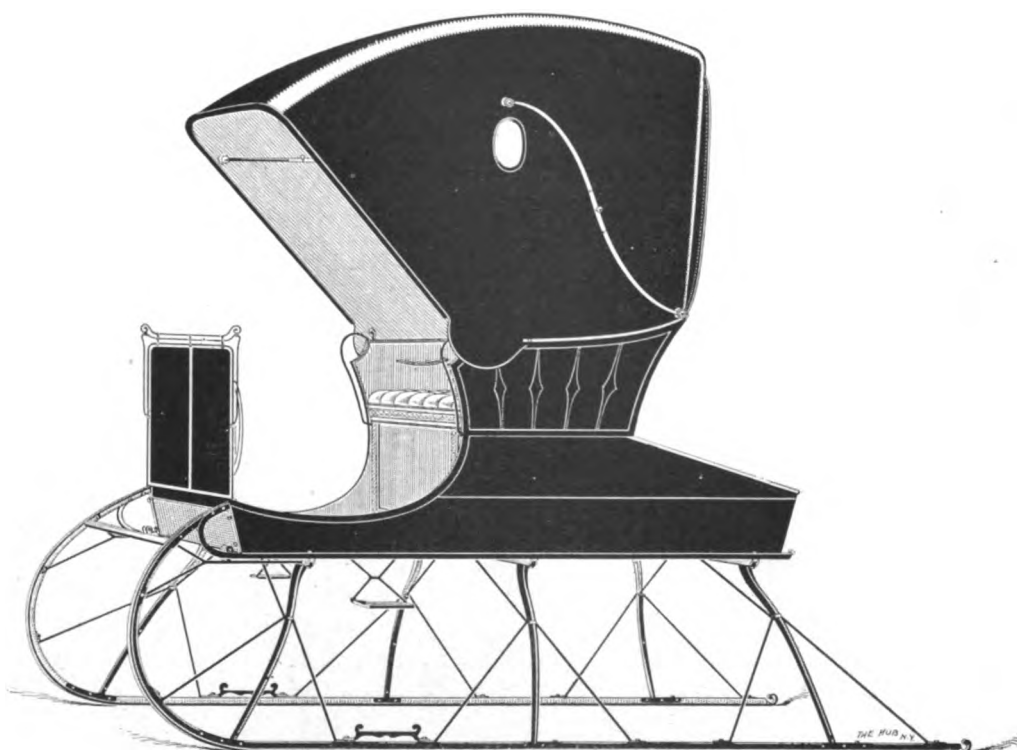


No. 510 Driving Sleigh.

SCALE,  $\frac{5}{8}$  INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.50.)



No. 511. Physician's Sleigh.

SCALE,  $\frac{5}{8}$  INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.50.)



Plate CXXXIX.

**Sidebar Wagon.**

See description under "Latest Styles."

(Electrotype, \$2.00.)



Plate CXL.

**Ladies' Phaeton.**

See description under "Latest Styles."

(Electrotype, \$2.00.)

Plate CXLI.

**Demi-Mail Phaeton.**

See description under "Latest Styles."

(Electrotype, \$2.00.)





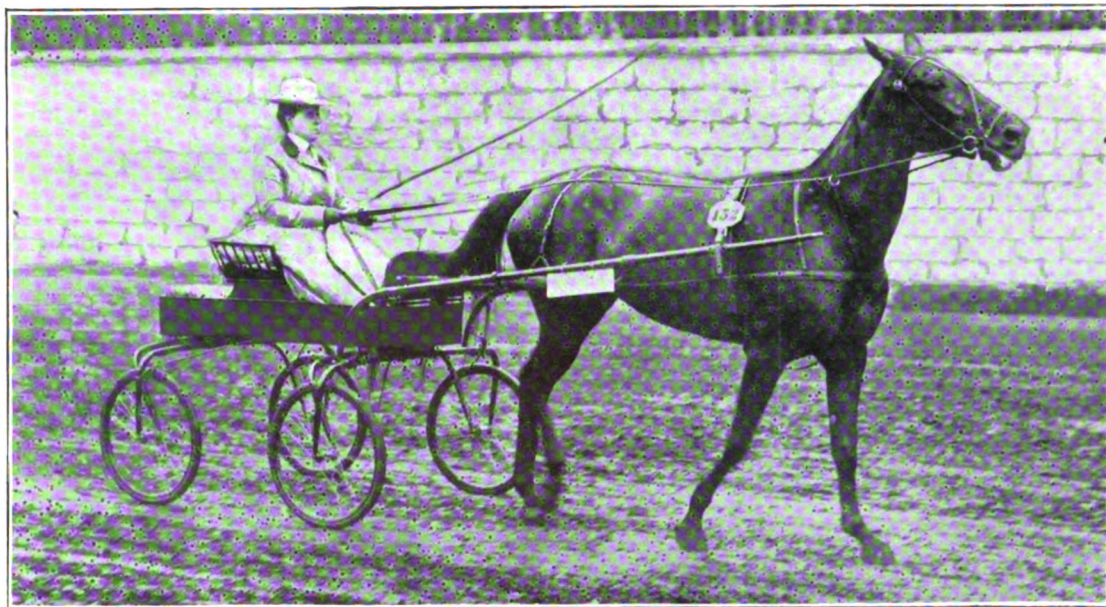


Plate CXLII. Mrs. A. T. Phelps, of West Troy, in a Payn One-Man Wagon.

Second Annual  
Speedway  
Parade.  
See page 121.

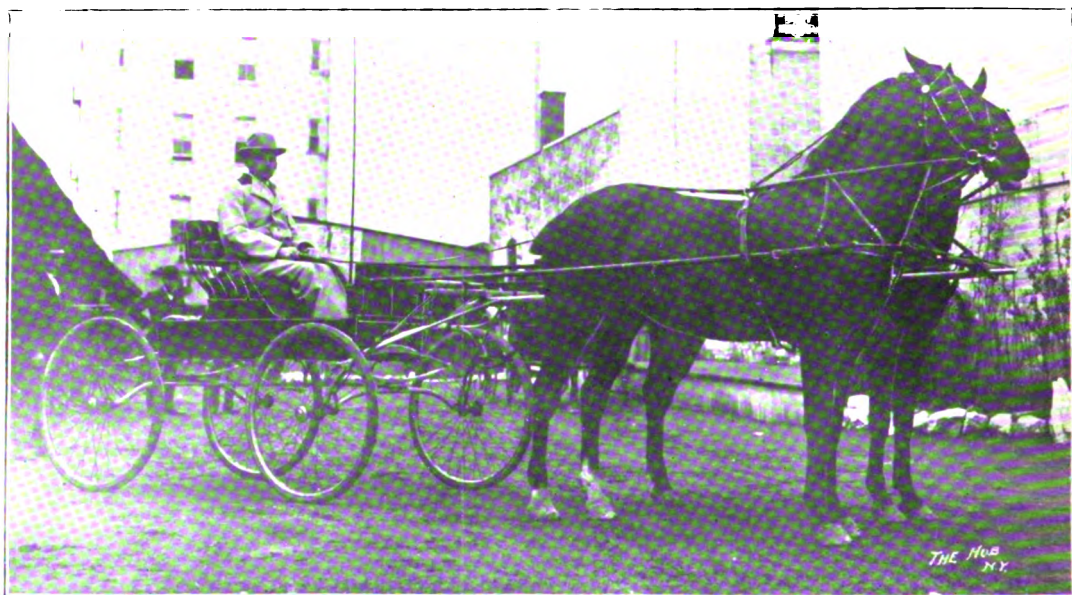


Plate CXLIII. J. Clint Brower, Brooklyn, N. Y., driving Clara and Mabel.



Plate CXLIV. The Line Passing Beneath Washington Bridge.



Plate CXLV.

**Brazilian Hearse.**

See description under  
"Latest Styles."

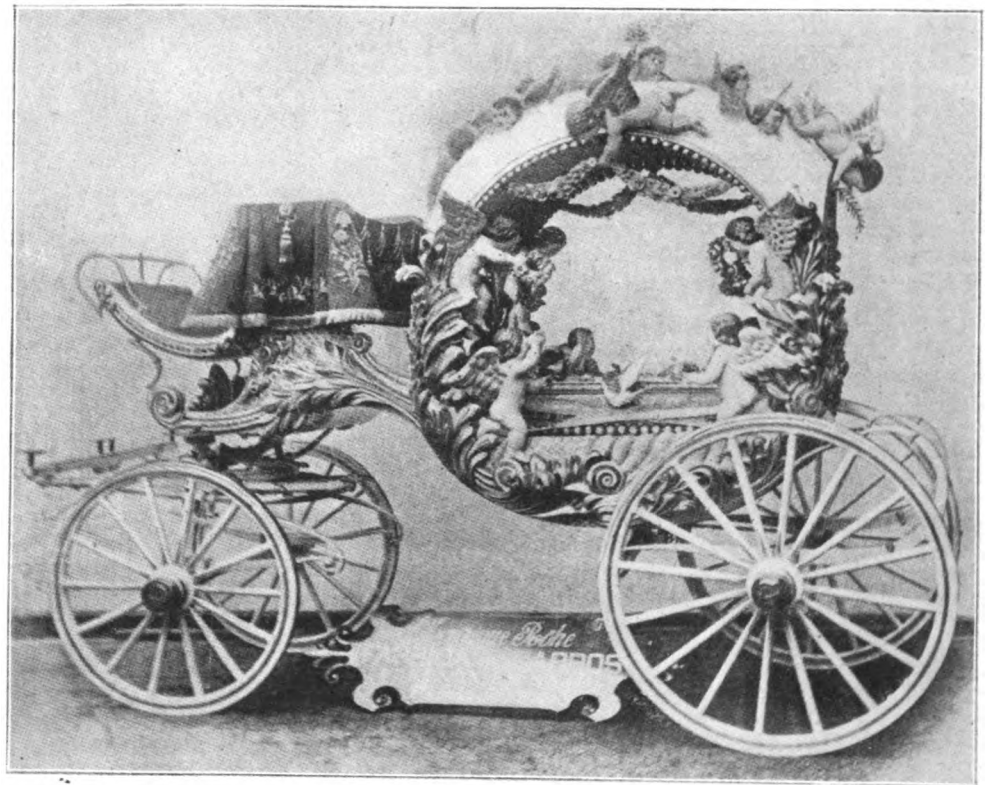


Plate CXLVI.

**Business Wagon.**

See description under "Latest Styles."

Plate CXLVII.

**Combination One-Horse Truck.**

See description under "Latest Styles."





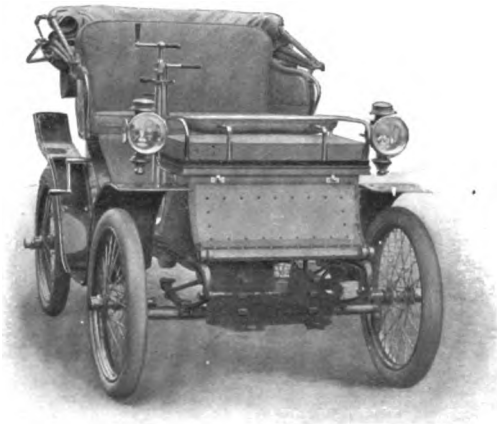
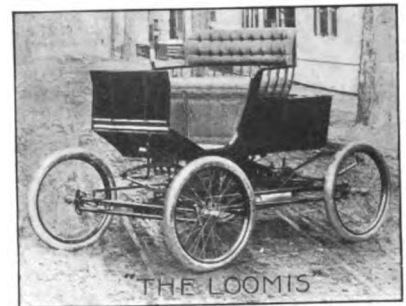


**Upton Runabout.**

For description, see "Automobile Department."

**Loomis Automobile.**

For description, see "Automobile Department."



**De Dion-Bouton Motorette.**

For description, see "Automobile Department."

**Delivery Wagon.**

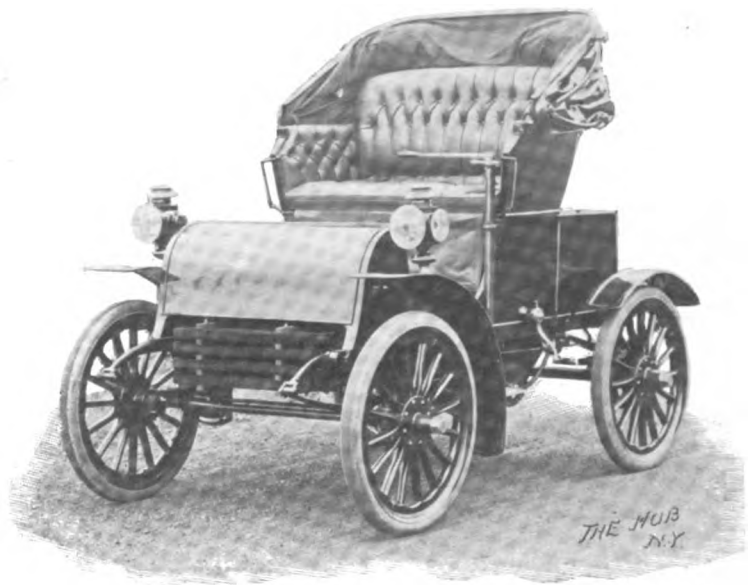
For description, see "Automobile Department."





**Automobile Co. of America—Stanhope.**

For description, see "Automobile Department."



**Hampden Automobile.**

For description, see "Automobile Department."

**Kidder Delivery Wagon.**

For description, see "Automobile Department."





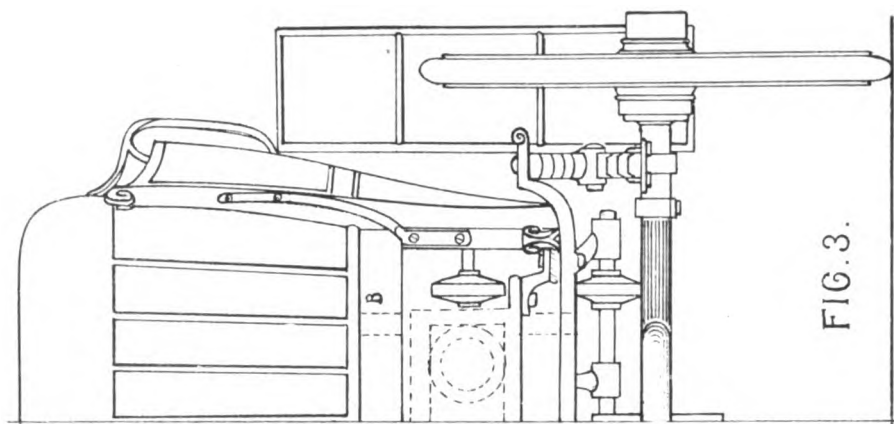


FIG. 3.

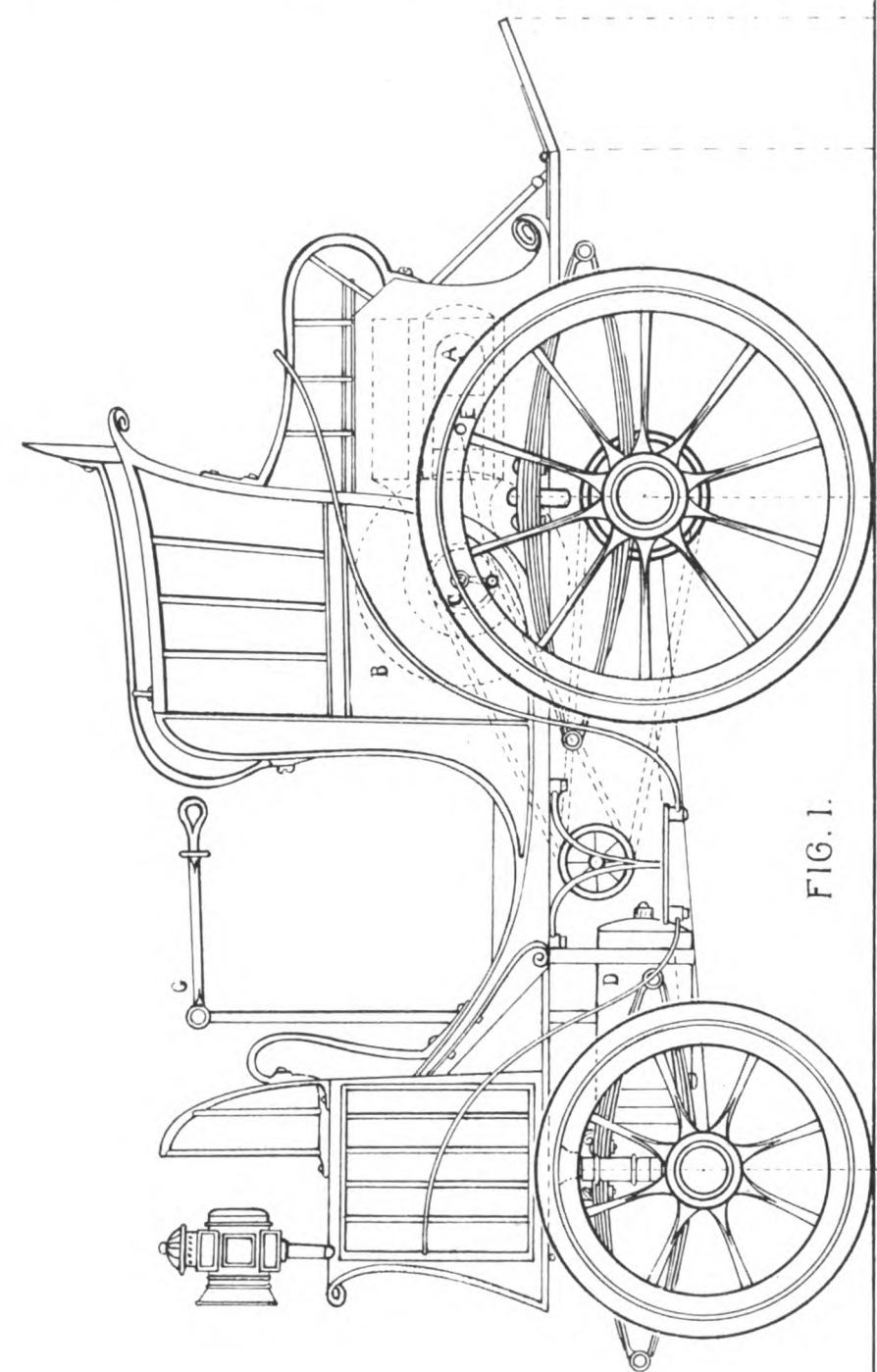


FIG. 1.

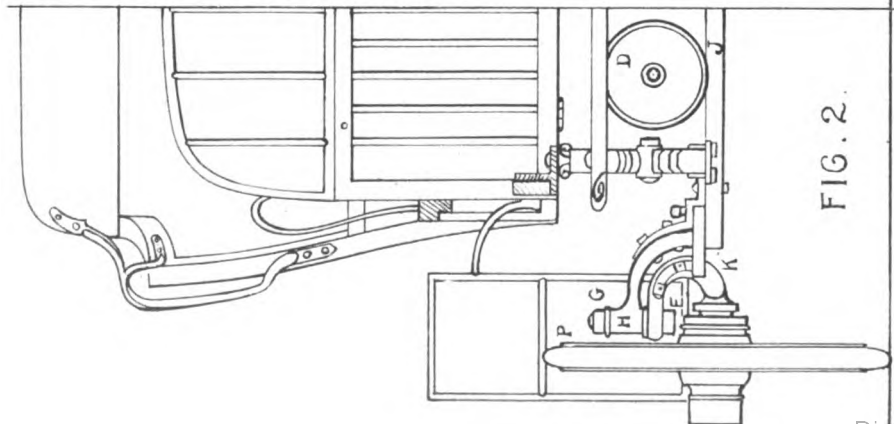


FIG. 2.

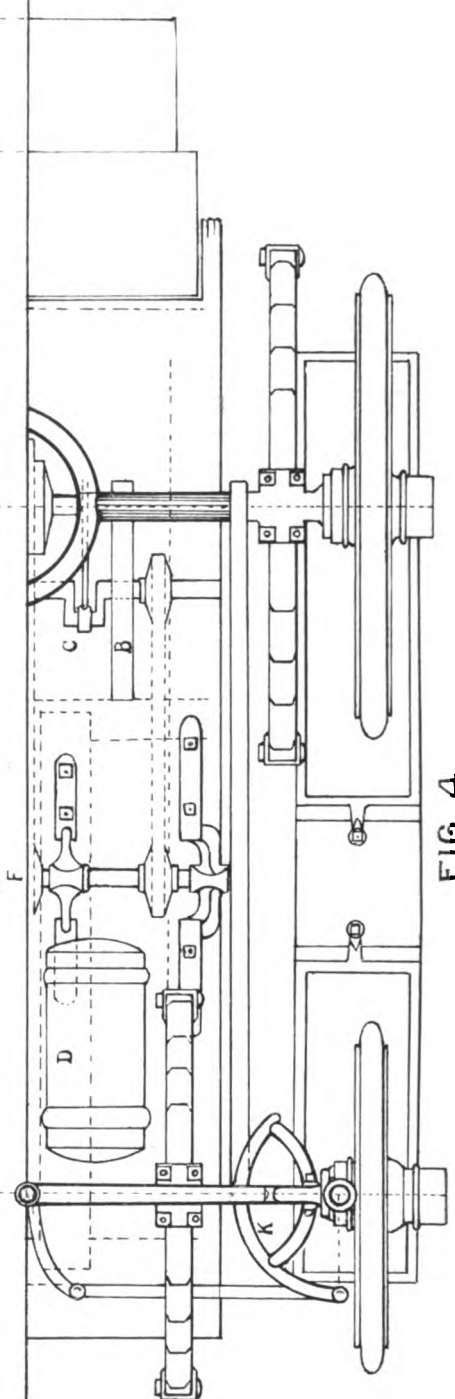


FIG. 4.

WORKING DRAWING OF AN AUTOMOBILE PHAETON. SCALE 3/4 INCH TO THE FOOT.



# CARRIAGE TECHNICAL DEPARTMENT.

Comprising the Wood, Smith, Paint and Trimming Shops.

## WORKING DRAWING OF AN AUTOMOBILE PHAETON.

Scale,  $\frac{3}{4}$  inch to the foot.

THESE carriages are also called "Auto-Cars." The one shown is a four passenger phaeton, but when the rear seat is not wanted for a rider, it is a convenient space for luggage. The same may be said for the front box of the body, forward of the dash, which contains coils of water tubes used for the purpose of cooling the cylinder, *a*, of which there are two geared to a balance, and fitted with two 18-inch fly-wheels, shown at B, Figs. 1, 3 and 4. These fly-wheels are pinned to the crank shaft C, Figs. 1 and 4, outside of the cylinders. The piston rod and its coupling with the crank shaft run in oil, the speed being gauged with valves to 400 and 600 turns per minute; hence the engine, or motor, is enclosed in an air tight casing, the crank shaft passing through stuffing boxes; thus the marking parts are oiled continuously, and from the movement of the parts the oil is projected into the cylinder, the forward end being open. Fitted around both cylinders is an air tight jacket filled with water, which is forced, in and out, by a pump run by the engine. This water is cooled in the tubes at the front end of the body, which is exposed to the air; hence the water circulates around the cylinders constantly, and by this means keeps the cylinder cool, a degree below the expansive point. Upon the two fly-wheels is fitted a ribbon of steel connected with a foot lever and operated as a break to stop the carriage. At the front of the carriage, fixed to the edge plates of the body, are two nickel steel cylinders, D, Figs. 1, 2 and 3, as gasoline reservoirs, which are connected with an air pump. The gasoline is thus piped to the carburetter, an apparatus requisite to vaporize petroleum spirit by means of an air current. Thus the mixture of petroleum spirit, or vapor, with heated air forms the means of explosion within the cylinders. The carburetted vapor is drawn into the cylinders by suction, the backward stroke compressing the charge of gas, ready for ignition, which takes place at the right moment, which movement is controlled by valves worked by a cam attached to a shaft, which is revolved only half as fast as that of the crank shaft, as an explosion cannot take place in both cylinders at the same time; consequently one of the cylinders is drawing in one charge while the other is exploding another. The following work must be done within each cylinder during two revolutions:

Connected to the crank shaft C, Figs. 1 and 4, are two sprocket wheels,  $6\frac{1}{2}$  in. diameter, stationed on each side of the horizontal plane of the cylinders, which by a nickel steel chain drive a parallel shaft, on to which is mounted at its center F a like wheel of the same diameter, connected by a heavier chain of the same metal, to a sprocket wheel 11 inches in diameter mounted on the divided axle of the hind wheels, turning them by means of a differential gearing. Here the axle turns within a sleeve, the hind wheel being fixed to the axle and turns with instead of revolving about the axle. The differential gearing permits either wheel to turn at different speeds; thus in turning curves of the roadway the outside wheel will necessarily turn faster than the other, having the greatest distance to travel in the same time.

By means of the lever G, Fig. 2, the front wheels are turned on the pivots H, guiding the carriage in the desired direction. The wheel turns on  $1\frac{3}{8}$  in. collinge axle. The stub is curved above the hub and as near to the spoke as possible. The top surface is dressed to a horizontal seat to receive the box of the arched truss J, to which is clipped the elliptic springs. Through the stub is passed a  $1\frac{1}{8}$  in. bolt, having a square shank to prevent turning when the nut E is screwed to the threaded stem. When the box H is in place, as shown in Fig. 2, the nut G is screwed on, which permits the axle turning on the stub

of the axle. At K is bolted the iron brace, as shown in plan Fig. 4. This is a circle, the bottom surface resting upon the top of the truss J, and bridged over by an offset, which is bolted, as shown, to the truss J. A set screw is employed to take up the wear. This brace K supports the lateral stress of the axle, and works like a fifth wheel of a buggy gear; hence the wheel P will be equally supported in either position to which it may turn, and geared against the stress impinged upon the bolt and pivot at H. Possibly we are the first to call attention to this pivotal front axle. The reason for this shape of pivotal front axle is that the weight upon it may be brought as close up to the center of the wheel P as possible. If this wheel P was disked and then turned under to a plumb spoke until the tire, at the ground, was directly under the pivot H, then this weight would pass vertically through the spokes of the wheel P, and there would in consequence be no more stress at the collar than at the nut end of the axle, but as set on the axle in the drawing, Fig. 2. The wheels will, when the weight comes on, be narrower across the top than at the ground, a position which always invites excessive vibration, which is always present in a vertically poised wheel.

The construction of the body of this carriage is determined by the machinery which it envelops; hence there is no bottom board. The foot board is removable, so are both seat frames. The door at the back end of the body is hinged so as to turn down to a vertical position, or to answer for a foot board for the riders. It is, in order to obtain leg room, made and hinged in two parts, the one folding on to the other, as shown in both the side and bottom views. By this means we can get at the motor from the top and each end. The front box has a hinged door at the forward end, as shown by the hinges and backs, Fig. 2. The body can be conveniently removed from the gear by removing several bolts, the steering lever and mud guards. The T plates support the machinery and the body. The cross bars shown in dotted lines, Fig. 4, are bolted to the plates and not fixed to the body. In this way every part is bolted to the same iron, which simplifies the construction, and the gear can be completed without reference to the body. See end of sill, Fig. 2, where T plate is shown.

This carriage is suitable as a touring car, having considerable space for baggage, and can be supplied with a top fixed with a shifting rail, to be removed when four ride. It is necessarily heavy, but could be made somewhat lighter if the engine were placed below the body between the axles, which would then dispense with the back seat, but if we set the cylinders in a vertical position instead of the horizontal, we can still conceal them within the body. Two reasons against this are excessive vibration, and more heat directly under the front seat, which could not be opened up, as shown. Again we would be crowded for space for the fly-wheels and other machinery. These fly-wheels balance the engine as no other means will; the noise by their use is reduced to a minimum, and there can be no up and down jog to the springs, which would be the case if the cylinders were fixed in a vertical position.

The lengths over all of the finished carriage is 9 ft. 7 in.; width, 68 in.; height, 6 ft.; distance between axle centers, 4 ft. 9 in.; rear wheel, 38 in.; front wheel, 28 in. high; track, center of tires, 4 ft. 10 in.; front spring, 34 in. long; 8 in. high, 2 in. wide; 5 plates; rear spring, 40 in. long; 10 in. high, 2 in. wide; 5 plates; front axle,  $1\frac{3}{8}$  in. for  $7\frac{1}{2}$  in. hub; rear axle,  $1\frac{1}{2}$  in. for 8 in. hub; size of hub, front, 6 by  $7\frac{1}{2}$  in.; rear, 7 by 8 in.; spokes for front wheel,  $1\frac{3}{8}$  in.; rear,  $1\frac{3}{4}$  in.; 8 and 10 spokes, point band for front hub, 2 in. long by 5 in.; rear,  $2\frac{1}{4}$  long by  $5\frac{1}{2}$  in. in diameter; width of body across arms, 46 in.; at elbow, 38 in.; at bottom, Stanhope pillar, 36 in.; outside of boxes, back and front, 32 in.; length of body, 7 ft. 8 in.; height, not including lazy back, 37 in.



## DESIGNING CARRIAGES.

THE successful carriage designer of to-day is not from necessity an originator. He has various schools before him, and bases his success upon new combinations and in altered positions of established lines. While those of carriages are not so well defined as those of the schools of architecture, yet they exert a marked influence. The architect resorts to the Corinthian for ornamentation, the Doric, for simplicity and strength; Ionic, for simplicity and majesty; Tuscan, for plain and unornamental; Gothic, for well-defined and sharply pointed arches; and composite for a combination of Ionic and Corinthian, and never loses sight of the particular school when planning his buildings. And yet he is continuously obtaining new results, not original designs. The carriage designer resorts to new combinations of lines to create new forms. These modifications of old combinations of lines offers opportunities to an extent that is not fully realized, even by expert draftsmen.

We may divide the schools of carriages into three classes—those composed entirely of straight lines, those with curved lines, and those with combinations of straight and curved lines. In each class the draftsman has a distinguishing feature that must not be lost sight of, and yet he has an almost unlimited field in which to work in each class, and has it in his power to produce manifold effects.

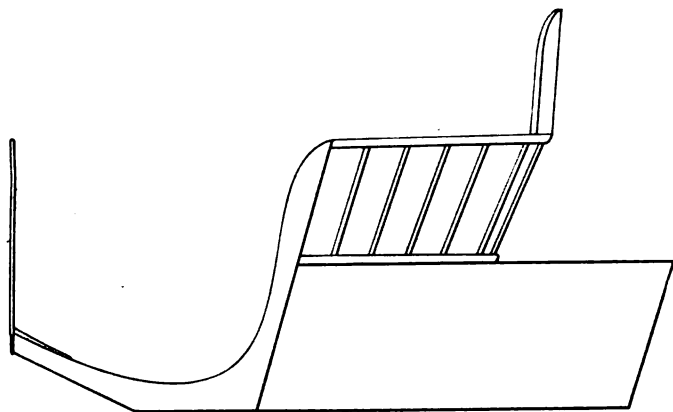


FIG. 1. STANHOPE BODY, UPRIGHT LINES SHARPLY CANTED.

The pitch of a straight line, the modification of curves, and the combination of the two, exercise a marked effect, even where either forms but a minor part of the whole. To illustrate, we direct attention to two stanhope phaeton bodies, in which the characteristic feature, the pillar, is maintained in each, and in which the general dimensions are maintained, clearly showing how great the results of small changes. Fig. 1 shows a body with a sharp cant to the stanhope pillar, increased flare of seat back and rear of body, and the usual foot tread and bracket. Fig. 2 shows a body of the same dimension as Fig. 1, with all lines set nearly at right angles.

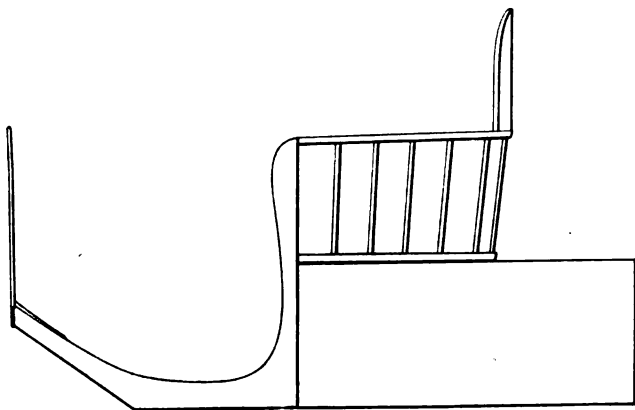


FIG. 2. STANHOPE PHAETON, UPRIGHT LINES NEARLY PERPENDICULAR.

Now take the two bodies and place them on different proportioned gears, and we have what appears to be two different styles of vehicles. In Fig. 3 we have the body Fig. 1 mounted upon a long gear; in Fig. 4 the body Fig. 2 mounted on a short gear, both bodies being at the same height from the ground, and on wheels of the same height, but of different proportions. To produce this there has been no straining after new lines; simply the changing of

the positions of the old, but the eye is cheated and the mind is made to believe that a new design is created. The best trained eye can be deceived and false impressions created by a series of intersecting

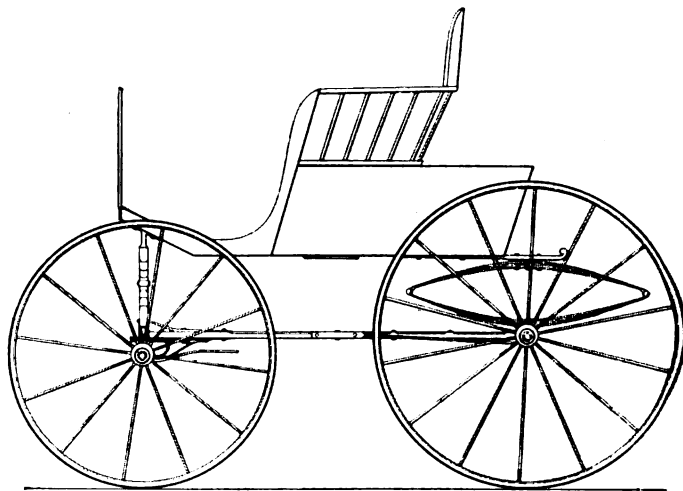


FIG. 3. BODY NO. 1. MOUNTED ON A LONG GEAR.

lines that are at different angles, as illustrated by Fig. 5, where the two central lines are drawn straight and parallel with the others, yet they appear to the eye as though bowed in the center, and in like manner new combinations give the idea of new styles. Another illustration of what small changes will do is shown by the two drawings of standard Brougham bodies. In Fig. 6 we have the "Peters" with its flattened lines and well-defined corners, at the lower back corner of the quarter, and at the heel of the drop center. In Fig. 7 is shown the "Barker," in which the general

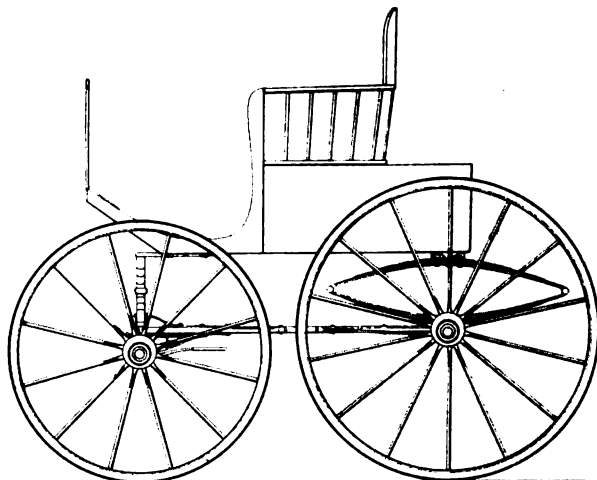


FIG. 4. BODY NO. 2. MOUNTED ON A SHORT GEAR.

character of the lines are curved and the two points so well defined in the "Peters" take a full round. The proportions do not differ materially. Scarcely two builders adhere to the same proportions in detail. It would be folly to call either of these "new styles," even at the time they were introduced, and yet they present a very marked difference. A new style pure and simple must be something heretofore unknown to the trade. Every part must differ from any before shown, and must be strictly new. But as we have said, new modifications can be, and are, made that give to the whole

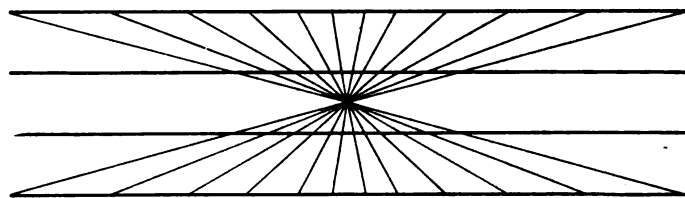


FIG. 5. AN OPTICAL ILLUSION.

a new appearance, and in the words of the trade can be called new. These illustrations serve to show how completely the general



appearance of a vehicle may be changed by the modification of lines at a few points, and one has but to go through the field to see how complete these are in all families of vehicles. The square box buggy body is converted into the "Corning" by cutting away a portion of the panel forward of the seat; a coupé becomes a "coupé rockaway" by the substitution of a low seat for the high one and extending the forward end of the top. The two passenger phaeton becomes a "cabriolet" by the addition of a seat at the front. We might carry

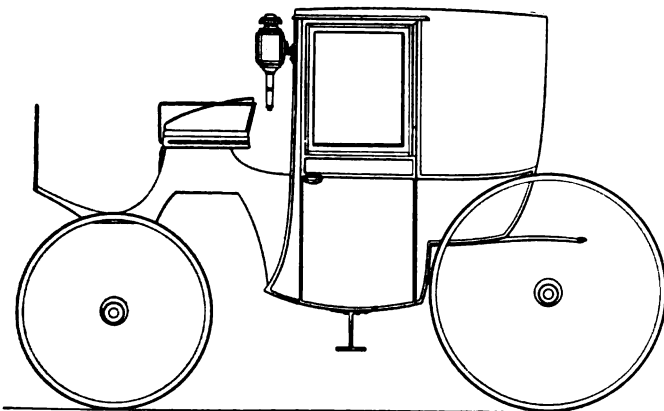


FIG. 6. "PETERS" BROUGHAM.

illustrations of the effects of minor changes throughout the entire line of pleasure carriages but enough proofs have been presented to prove the basis of our position, viz., that the art of designing rests in the ability to maintain the characteristic features of each class of vehicles and to mould new forms by modifications, which, of themselves though slight, are yet so distinctive as to give the impress of a new form.

As was predicted in THE HUB a few months ago, this season has opened up with a multitude of freaks, which are heralded as newest styles, and it is possible that the announcement in some cases is correct, but they are not likely to survive during a season's trade, and will soon be relegated to the fake's museums. Such do not deserve to be considered when carriage designing is mentioned. They serve, however, to illustrate the difference between the work of an artist and that of the juggling, unskilled egotist. The carriage designer should remember that "the perfection of an art consists in the employment of a comprehensive system of laws, commensurate to every purpose within its scope," and that "the one thing

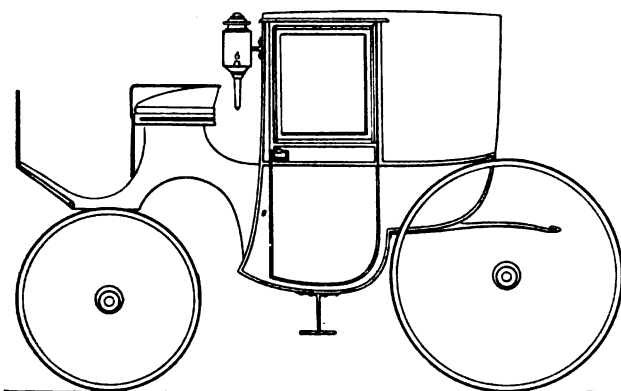


FIG. 7. "BARKER" BROUGHAM.

that marks the true artist is a clear perception and a firm, bold hand.'

#### WIDE SHOES FOR SLEIGHS.

IN some parts of Europe sleigh builders provide extra shoes for their sleighs. These are fitted to the runners, when the narrow shoes are in place, being provided with clips or bolts, whereby they are secured to the runners. These extra shoes are from four to six inches wide, and of thin steel. The front ends extend enough above the rear to insure their running over the snow, not cutting through it, and the sides are narrowed to the width of the regular runner shoe at the ends, the taper being from both sides alike. With these wide thin shoes, the sleigh can be run over soft snow without danger of cutting through to the paving, and as the weight is light, they give a decided advantage on days when the snow is soft. These extra shoes should be so attached that they can be removed quickly.

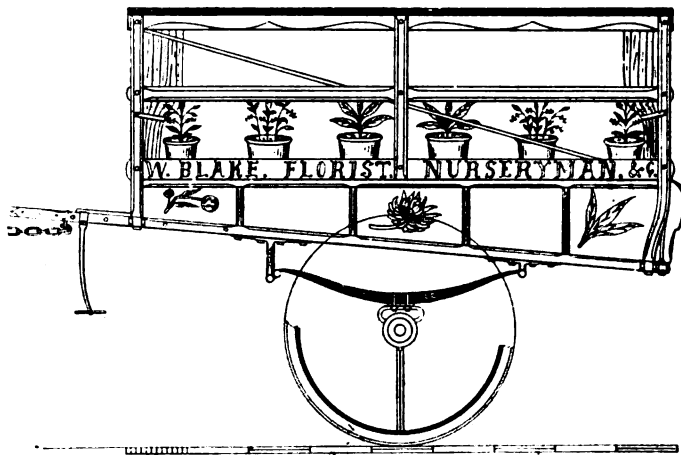
#### ENGLISH FLORIST'S CART.

(From Our English Correspondent.)

IN the principal cities in England, street vendors of flowers have carts peculiar to the necessities of their trade. Herewith we give a design of one of these, with the dimensions for building: Length of body, 8 ft. 9 in.; depth of front of body framing over bottom sides and top rail, 9 in.; over back of body, 18 in.; full depth of body in front over head, 3 ft. 7 in.; ditto over hind body, 4 ft. 4 in.; width on bottom, 34 in.; on top rail, 35 in.; width of head across body, 4 ft.

Height of wheels, 45 in.; width of tire,  $1\frac{3}{4}$  in.; depth of felloe,  $2\frac{1}{2}$  in.; spokes, 2 in.; diameter of hub, 7 in.; Warner patent standard length of hub, 9 in. Length of springs, 4 ft. 7 plates, 2 in. wide; depth of front scroll,  $7\frac{3}{4}$  in. to centre; hind,  $2\frac{1}{2}$  in. centre; length of axle over collars, 41 in.; over solid flaps, 34 in.; length of colling axle,  $1\frac{1}{2}$  in.; length of boxes,  $9\frac{1}{4}$  inches.

The bottom sides of the body, to which the shafts are bolted, are pitched at an angle, so as to reach the height of horse used, at tug stop. This admits of keeping the body low and at the same time of using a straight shaft. This mode of construction has the advantage of placing the draught line of the trace in line with the axle, which gives a powerful advantage to the horse in pulling,



ENGLISH FLORIST CART.

either on level or hilly roads. The construction of the body will not admit of a high wheel being used, nor is it necessary on a vehicle of this description. Before the shafts are fixed to the bottom sides, they are edge-plated, the bolts passing through shaft and plate, thus ensuring a strong job in the fixing.

In the painting, the panels are decorated with designs appropriate to the calling of a florist. The ground color and the picking out and fire lining should not be too loud, or it will not contrast favorably with the character of the cartage.

#### STRAP LOOPS ON FRONT FUTCHELL STAYS.

THE strap loop on the front part of the front stays of what are termed "straight" futchell gear, are made the same to-day as they were fifty and more years past. No one has changed them. Perhaps the changing of them has not been thought necessary. Again, perhaps many smiths and carriage builders think they must continue to make them that way.

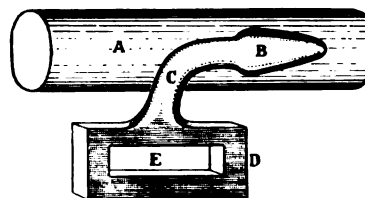


Fig. 1.

The writer has no hesitancy in saying that the strap loops, as made to-day are superfluous. We say "the strap loops," not the straps; the latter are very essential. Neither can we call to mind a single instance in fifty years where the strap loop has done the work expected of it, when one horse has had to do all the work, or where the



even a bar bolt has been broken, the elaborate strap loop has either broken off or straightened out so much as to be as useless. Fig. 1 shows the strap loop as now made and secured. A, section of stay; B, that part of the loop which is molded to the stay; C, the neck necessary to give it the proper shape; D, outer part of the loop with oblong hole or recess; E, for the insertion of the strap. The importance of the duties of the strap loop may be measured by the fact that the majority of the straps are made of double thickness, or two ply of leather, usually from  $1\frac{1}{8}$  to  $1\frac{3}{8}$  in. wide, chiefly  $1\frac{1}{4}$  in.

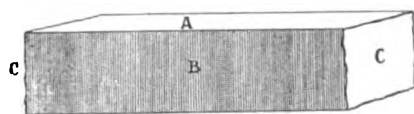


Fig. 2.

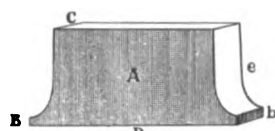


Fig. 3.

wide. To make and complete a pair of these will require from two to three hours' time of a good, fairly fast workman, who has been accustomed to making them, and about as much time is required by the finisher, making the cost of labor alone all the way from \$1.40 to \$2.10.

We are not at present going to make a set of front stays with that kind of a loop, but we propose to show how they can be made cheaper and in such a manner as to improve the appearance of the front stay, and when done to have a piece of furniture which will insure that the safety straps will perform the duties required of them, viz., holding of the even a bar securely in position.

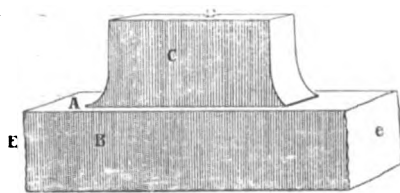


Fig. 4.

To begin, we take a piece of square iron same as Fig. 2. A, top surface; B, side surface; C, ends of sufficient size to weld on a strap loop and to permit of swaging to an oval of proper size. If the oval when completed is to be  $\frac{7}{8} \times \frac{1}{2}$  in. the iron should be  $\frac{3}{4}$  in. square, Norway preferred, and about eight inches long. Prepare a piece as per Fig. 3. A, the side of the main part; B, b, ends projecting from the same; E, e, ends of the main part; C, top and D, the lower edge. Make the piece of  $1\frac{1}{4} \times \frac{3}{8}$  in., Norway preferred, and for ordinarily heavy jobs, from E to e,  $1\frac{3}{4}$  in.; from B to b,  $2\frac{1}{4}$  in., upset the part B, b, D, until it is about  $\frac{1}{2}$  in. thick. Then raise a welding heat at the centre of Fig. 2, at A, also do the same with Fig. 3, at B, b, D,

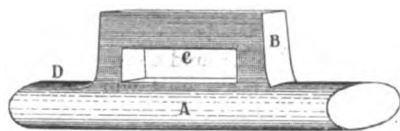


Fig. 5.

and jump weld Fig. 3 on to Fig. 2, and get, as a result, what is shown by Fig. 4. A, B, body of the piece of square iron, E, e, ends of the same, C, side of the flap or ear just welded on, D, upper section. If, after the jump welding there is a little projecting of C, above the surface, A, let it rest there; it is not in the way. The future operations and manipulations will take care of all little superfluities which may exist at such point.

In the further manipulation of this iron we have to have recourse to a swage block, which is shown by Fig. 7. A, side of block; B, one end; C, the upper flat surface; D, the concave portion, with which to assist in joining the oval; E, an oblong hole in the block in which the lug or ear can enter when swaging the stay.

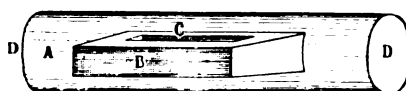


Fig. 6.

If required a lug may be formed and turned down as per dotted lines F. The concave portion must be in width and depth to equal the sized oval you purpose making the stay of. The slot or oblong hole, E, must be of size to suit the lug C, D, Fig. 4. Make the swage not less than 4 in. long, and high enough to permit of working

C, D, Fig. 4, in the oblong slot E, Fig. 7, and prevent its coming in contact with the anvil. A different block will be required as the sizes of the oval increase or decrease.

We left off where we had welded C, D, on to A, Fig. 4, by jump welding. We next with the hand hammer, after heating the piece, Fig. 4 to a sharp red heat, break down all the corners, so as to permit of the piece to accommodate itself to the swage block. Next raise a nice soft welding heat on Fig. 4, where C, D, unites with A, place the block, Fig. 7, on the anvil, insert C, D, Fig. 4, in the slot E, Fig. 7, place the swage on the top of the same and have the helper come down with a few sharp raps of the sledge, which will serve to weld C, D, more firmly to A, and at the same time form the oval and a finish at the point of junctions of C, D, with A, Fig. 4.

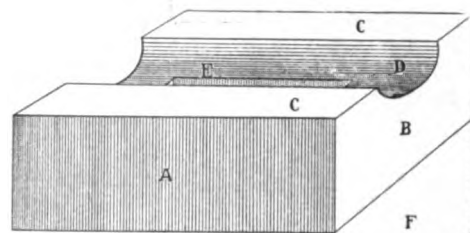


Fig. 7.

After we have gone through with this process we remove the iron from the swage block and trim off C, D, Fig. 4, to proper size, with hot chisel. We again heat the lug or ear and have recourse to the block, Fig. 8, A, size of block; B, end of C, flat surface of top of block, D, shows the swage section so formed as to admit of the oval iron on the edge, E, an oblong slot at the edge of the oval part, which permits of punching the flange or lug C, D, after welding on to A, and A, part formed into an oval. When this much has been gone through with we get what is shown in Fig. 5, A, oval section of

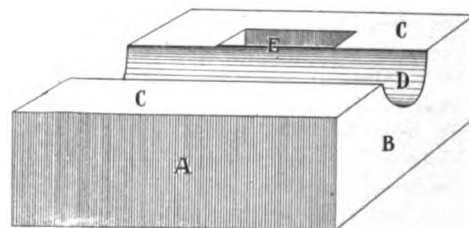


Fig. 8.

piece; D, end; B, the strap-loop, and C, the recess for the strap which forms the loop. We show Fig. 5 with the loop up so as to show formation. Fig. 6 shows the piece in its proper position; A, section of stay; D, ends; B, frame of the loop; C, recess.

One block only as per Fig. 8 is necessary for punching, which make about  $3\frac{1}{2}$  or 4 in. long,  $2\frac{1}{2}$  in. wide, and about  $1\frac{1}{4}$  in. deep. Make of iron and case harden the top or weld on a spring steel face on the slot side will answer every purpose.

In welding the piece on the stay place the loop on the back part of the stay; there it is out of the way, holds the strap in position without any strain and throws the onus where it belongs, on the back of the stay. It is not necessary to waste any great amount of time in finishing the loop; it is out of sight comparatively, and does not require as much labor or manipulation as the old-fashioned, and with proper tools as described can be made fully 60 per cent. cheaper than the other way and will be of proper value and service.

#### LETTERING WAGONS.

In this article we shall endeavor to point out, from an observer's standpoint, some of the inaccuracies most prevalent in vehicle painting; also to show how they may be corrected. There is a great deal of such work being done by amateurs and novices—novices in the sense of never having had any instruction, except what they have learned from observation. Really, some that have learned it in this way are first-class vehicle letterers, the artistic instinct being inherent to such an extent that a few hints is all that is necessary to enable them to paint a fair sign.

In years passed, when the art of wagon lettering and that of sign painting were regarded as wholly distinct callings, the standard



alphabets used by the vehicle letterer were few in number, namely, Roman, Gothic, script, and wide or extended and narrow Gothic, known, in sign painters' parlance, as block. Although these alphabets were widely used by sign writers also, the characteristics of the wagon letterer's use of them were distinct, in so much that great attention was given to working out details, and the boldness of their execution was a noted feature.

Business demands, or some other cause, has largely revolutionized the wagon letterer's art. Whether the introduction of the so-called up-to-date system of lettering in vehicle lettering has improved it any, I have my serious doubts, for there are no plainer style of letters than the Gothic and Roman, nor more graceful. Nor are there any others which will admit of contraction and extension, as they do, without destroying their beauty. When they are worked out in perfection of detail, they are handsome enough for any job. The continual hunt for something new and novel, which seems to be dictated by modern methods of business, has had much to do with the introduction of new types of sign writers' alphabets in nearly all of the so-called up-to-date advertising sign painting. Owing to the cramped space and irregular lines, it is impossible for wagon letterers to exercise the same freedom as the sign painter, except in a few instances, where there is considerable space, and only a few letters to be used. The sign painter usually has plenty of room, hence can paint an artistic sign without giving much thought to the arrangements, save in an artistic way. But the wagon letterer is obliged to arrange the letters to fit the panels, and, at the same time, preserve artistic lines, which oftentimes is a difficult matter, on account of the irregular shape of the surface. On the other hand, the latter has an advantage over the former, in so much, as he invariably has a smooth surface to work on, as compared to all kinds of surfaces which the former has to contend with.

Proficiency in vehicle lettering is obtained the quickest by practising on a board of about the size and similar in shape to that of the side of a wagon. A friend of the writer, a vehicle maker, and a fair draughtsman, and whose circumstances were such that he received a considerable amount of wagon lettering to do, and could not get a man to do it, just at the time when he wanted it done. By hiring any and everyone, he often got a poor job. Getting tired of this state of affairs, he erected a large board, and divided it into spaces of the size and form of such styles of wagons as came within the scope of the work he was required to do. By practising at times at laying out different styles of signs on these spaces, and filling them out with colors, he became so proficient in a short time as to gain quite a reputation for high-class work. Well directed practice is the secret of the expert letterer. If this man had contented himself with the knowledge that comes from doing actual work, he would never have succeeded in acquiring the reputation that he has. In blackboard practice the painter gains knowledge by freedom of movement and in taking risks in working out some creations of his mind which he would not dare to attempt in actual work for fear of spoiling the job. If he should happen to spoil a practice job, it makes no difference; he has learned something anyway. But, if he happens to strike a rare combination of colors, or letters in his practice, he is ready to carry it to his work successfully. He is not afraid. He knows the job will be all right. By the blackboard method of practice he ascertains his capabilities.

Many painters who make a pretence of doing the whole job, painting and lettering, when they come to lettering, begin it in a way exactly opposite to that which they should. Up to this time, perhaps, they have succeeded in getting a good job of painting; then deliberately proceed to spoil it in the way they go about the lettering. Instead of laying off the sign directly on the panel, and getting it all smeared up with chalk marks, etc., take a piece of manilla paper the exact shape and size of the panel, and tack it to a smooth surface in the same position as the panel. Sketch the lay out on this until it is satisfactory. Then take a perforating wheel and follow the lines carefully, and knock off the rough points made by the wheel with sandpaper. Then, by means of a pounce bag, filled with whiting or powdered charcoal, according to the color of the surface, the outlines may be transferred in the proper position. This does away with the

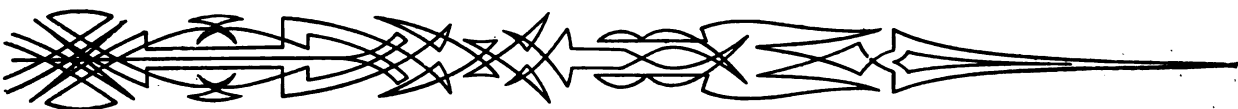
mussy work, often the result of the cut and dry plan. The painter saves time by so doing, as the same paper may often be used for both sides. If there were no other points in favor of perforated designs except cleanliness, that is enough; in fact, it is so superior, even should the letters be cut out and used as patterns, it should be used.

Another prevailing error, one which may be noticed almost every day, is made by attempting to crowd too much in the space. There is a limit to the amount of matter which may be put in a given space on any kind of a sign. On wagon signs, the painter is still more restricted in this particular. The amount of matter that may be put in a given space of a distinct shape, in order to make the neatest and most artistic appearance, is governed by the size and style of the letters, and the size and shape of the space. A long, narrow space will not admit of as many letters in a horizontal line as a higher space of the same length. It is understood, of course, we have reference to such spaces as wagon panels. A space, wide at one end and narrow at the other, is usually difficult to arrange the letters on it. The fewer the letters used in any wagon sign, up to filling a certain amount of the space, the nearer the ideal will the sign be. All of the letters, taken together, should not occupy more than one-third or one-half of the whole space in square measure. If a customer desires too much matter for the size of the space put into it, there is only one way to do it to insure a job, *i. e.*, make the main word, or words, of rather large letters, say about eight inches high, on medium sized panel, and the qualifying words of much smaller letters, so as to leave considerable space which is not lettered around the lines. If the attempt be made to fill the space with letters all of one size, the job will have a decidedly crowded appearance; or, if two or more lines of letters be crowded close together, it will result invariably in illegibility of the whole. This applies to jobs where the panels are square, or are parallelograms. A good rule to observe is to use as few letters as will possibly serve the purpose. There may be too few letters used, but it is unnecessary to caution anyone against it, as the mistake is invariably in using too many.

A wagon sign is an advertisement. Due consideration, therefore, should be given to its legibility, the most valuable characteristic of any sign. On account of rapid motion, a wagon sign must sometimes be read at a glance. A sign on the side of a building may be perfectly legible, and reads at a glance, while the same sign on the side of a swiftly moving wagon might prove very indistinct. A sign on a building admits of being read from different points of view, far and near, sidewise, and from above and below; but the sidewalk is where the wagon sign is generally read from. We have not the space to mention near all that goes toward making a good wagon sign. Suffice it is to say, there are a number of considerations beside the painting, colors, and forms of letters which should be taken into account, that the best results may be obtained.

Correct spacing goes a long way toward making a sign legible. In respect to legibility, the nearness that letters may be placed to each other depends on their shape and the boldness of the lines. High, light-faced letters placed close together are hard to read. Widening the bars, the spaces being the same, increases the legibility up to a certain width. In fact, any kind of light-faced letters placed close together are hard to read. Spacing correctly seems to me to be the hardest study of the sign painter. As a rule, more mistakes are made in spacing than in any other part of the art. The letter I seems to be the most difficult to get spaced properly. The letters B, C, D, E, G, H, K, N, O, Q, R, S, U, X, Z, and &, require the same space; A, F, J, L, T, V, and Y, and in the spacing of V, W, T and W, following L and A, and A following F, a little less than half the space given the others is allowable. I and J, and M and W, have equal spaces; I and J a little less than allowed the full letters, such as B, C, etc.; M and W a little more. When I is placed between two full letters it requires more space than when between such letters as F and V.

On the lower loop of B and S and the bottom part of X and Y should be made a little larger than the upper part. The lower horizontal stem of E and Z should be a little longer than the upper stem, in order to balance them properly. If not, they will appear to be top heavy.



ONE-HALF, FINE LINE, BELT PANEL ORNAMENT.



## TO TRIM TWO-SEAT CANOPY TOP SURREY.

THE accompanying illustrations show a neat design for trimming a two-seat canopy top surrey; using dark blue leather for the body lining, with black leather cord welts, dark blue cloth for roof lining, dark blue fringe, worsted tufts to correspond in color. Fig. 1 shows the style in which the back and the cushion tops are to be tufted, also the style of the cushion front and the seat fall, below the cushion front. Make the back up on a frame covered with heavy twilled muslin, with each tuft mark, re-enforced with a piece of the same material. Lay off the back for seven rolls,  $5\frac{1}{2}$  in. to 6 in. wide, according to the width of the back. Lay off the rolls on the leather with  $\frac{5}{8}$  in. fullness each way between the tufts, allowing enough leather at the ends to work them up full to the other rolls. The space above the top row of tufts will require from  $3\frac{1}{2}$  in. to 4 in. fullness. The tuft lines on the leather should be well creased down with the slicker or face hammer on the flesh side, and stitched near the edge of the fold with a light silk thread and small machine needle. Care must be used to avoid closing the tuft holes in the leather with the thread, and to have the ends of the thread secure under the tufts.

Flatten out the leather at the tuft holes and line with thick sheet wadding, with the glazed surface taken off, next to the flesh side of the leather.

To insure good results in the tufting of the back, the wadding must be pulled in over the tufted part, or the leather, when the tufts have been drawn in, will show loose places owing to the cotton preventing the hair from springing up when it gets the strain of the tuft cords. Fasten the leather with the wadding, at each tuft line, bottom and top, place the hair carefully in from the ends of the back,

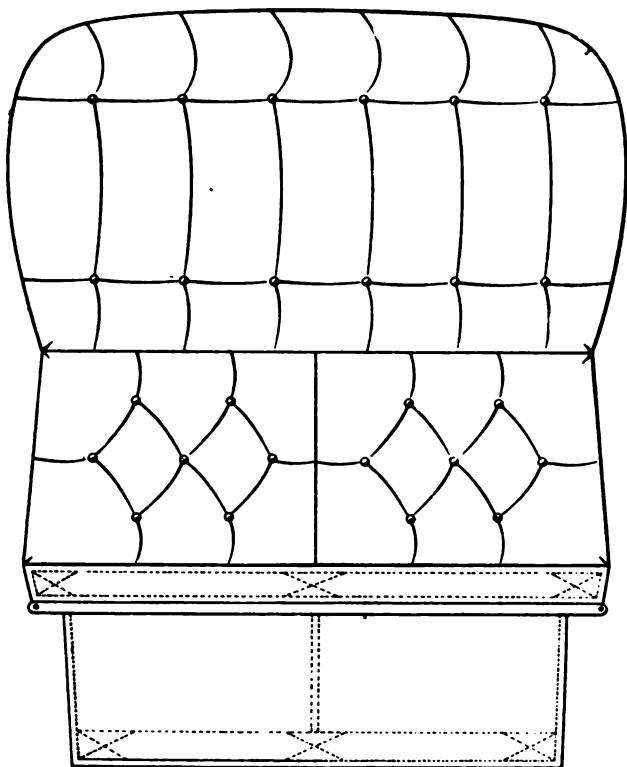


FIG. 1. BACK, CUSHION AND FALL.

so as not to split or displace the wadding. When the desired amount of hair is placed in close up the ends. Draw all of the tufts in on the face side, turn the frame over, and make slip-knot through the eye of a button.

The bottom tufts may be drawn in close, but those on the top tuft must not be drawn in close or there will be loose places in the leather about the tufts. A little judgment is all that is required in the tufting of a back of this kind to avoid bad results. Two-thirds of the trouble in making tufted backs is caused by not being careful when drawing in the tufts.

Make the cushion top in two parts, the bottom and the facings in one piece. The tops can be made on canvas or on a frame with muslin drawn over. The fullness in the leather given between the tufts,  $\frac{3}{4}$  in. each way, and  $\frac{5}{8}$  in. around the edges. The tuft lines in the tops are to be treated in the same manner as the back.

When the tops have been filled with hair, and the tufts' marks fastened down, the edges worked up and sewed to the canvas or muslin, join the two parts together at the center, with cord welt between, firmly sewed with a back stitch. Cut away the cord in the welt from the edge of the top; in sewing the top to the facings as the welt, not the cord, is taken in. Cut the foundation for the cushion front two inches wide and re-enforce with top leather. Cut the leather into parts, as shown in Fig. 1, paste the flesh side of the leather to the facing. In joining the parts together leave sufficient

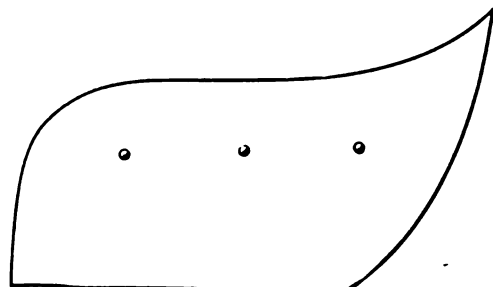


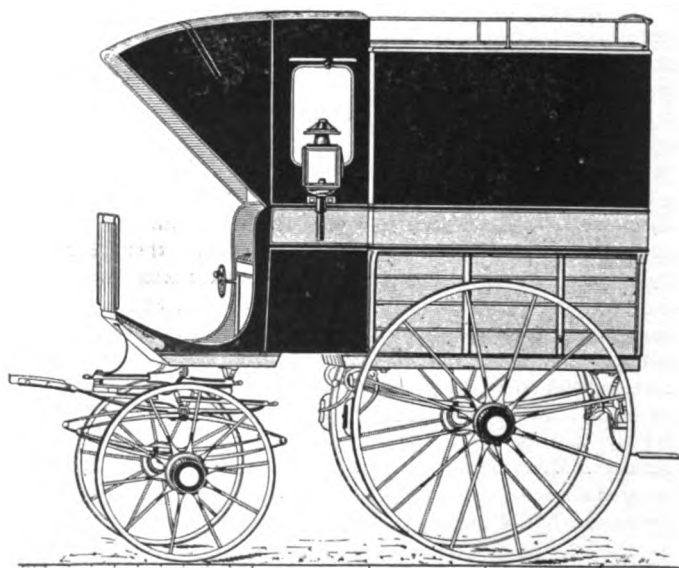
FIG. 2. SIDE QUARTER.

space between them to allow for the cover to be creased down between the re-enforced pieces. Apply paste only to the edges and the space between the pieces. In drawing the cover over the facing do not strain it, but leave it rather full crosswise.

Make the seat fall on duck canvas, sized over with thin paste; when dry cut the canvas to fit in between the rockers, and to extend from the seat to two inches from the bottom boards. Make the bottom of the fall to correspond with the cushion front, re-enforce the ends and the center with 5-16 in. strip of top leather, cut the leather to cover the fall wide enough to turn over the bottom to the top line of stitching. Cover the spaces between the stitching with wadding; cut away from the re-enforced pieces; tack the fall, when finished, to the front of the seat. Finish the seat front with  $\frac{7}{8}$  in. oval moulding, covered with bow leather. Trim both of the seats alike, except the side quarters. The back quarters must have more wadding, or filling, than the front quarters, and have three tufts. Cut off the eye of the tufts and fasten the tufts to the panel with small nails through the center of each tuft. Make the front quarters thin and plain.

## VOITURE DE CONFISEUR.

THE illustration herewith is a reproduction from a cut in *Le Guide du Carrossier*, and illustrates a wagon that we would term a

VOITURE DE CONFISEUR.  
(From *Le Guide du Carrossier*.)

caterer's van. The interior is arranged with shelves, etc., of various sizes, so as to accommodate whatever kind of merchandise is to be carried.



## SECOND ANNUAL SPEEDWAY PARADE, HARLEM SPEEDWAY, MAY 11, 1901.

(See illustrations under "Latest Styles.")

THE second annual parade of the New York Road Drivers' Association, which took place on May 11, was a marked success, notwithstanding the unpropitiousness of the weather. Fully four hundred turnouts took part. The heavy rains of the day before left the unpaved Speedway in a muddy condition, and the threatening rain during the day made it extremely uncomfortable for drivers and on-lookers. Yet withal the parade was a long one, and the sightseers numbered into the thousands, who lined the sidewalks and other points of observation, from the starting point at 110th street, to the clubhouse several miles away. There was a goodly number of turnouts from out of town, but the great majority were from Greater New York. These included the popular rigs that are so well known on the Speedway, and many gentlemen's turnouts of the finest kind. It was expected that many ladies would participate, but owing to the murky and disagreeable weather there were but few in line.

As to the vehicles it would be difficult to determine which could be designated as a leader. The very light speed wagon on bike wheels, both wire and wood, was given the foremost position, by owners of the speediest animals, and to a limited extent by the less prominent roadsters. The runabout on wire and wood wheels was in the fore where two persons occupied the seat, the high wood wheels contesting the low. There appeared to be a greater number of high wheel runabouts than there was last year. The standard one-man wagon, with its square box, side-bars and holster gear and light high wheels, was unchallenged by any departures from the established patterns, and the most prejudiced advocate of low wheels could not dispute its right to the first place as a pleasure carriage of the light class. This one-man wagon was the only type that did not use rubber tires. The extreme lightness of the wheels and the narrow tire ( $\frac{5}{8}$  in.) favored their use, but the low wood wheels, as well as the high ones on runabouts, were equipped almost universally with rubber tires, solid or pneumatic.

A very large percentage of the turnouts were single horse. This is explained in part by the difficulty of matching these speedy roadsters. A true match must run through the entire gamut, size, color, conformation, gait, step, etc. Color may be sacrificed, but if all other conditions are not alike the team will be a failure, no matter how much the success of each individual member. There were, however, some beautiful teams, teams that worked as one horse, and which stood as peers among the family of horses, light, trim and intelligent, and when properly harnessed before the one man road wagon, speeding over the highway, they outrank in beauty every other equipment in the horse world. And nowhere else can they be found to equal those in our country, and on such occasions as speedway parades they outclass all others. The fact of the teams' superiority does not, however, imply that the single roadster is not a thing of beauty. On the contrary, it stands second only to the team, and to the man who desires a quiet rest, and the occasional excitement of a speed contest, the single horse and the light wagon offer all that man can reasonably ask for. No wonder then that the business man, the gentleman of leisure, the members of the different professions, and the less prominent man, all join in making this annual parade a feature of the year.

To the carriage builder and the harness maker it means much. His genius is taxed to produce the best in his line. If he is a carriage builder he must produce a vehicle of great strength and extreme lightness, one that will not only support the weight, but carry it with safety, and one wonders how seventy-five to one hundred pounds of material can be put into the carriage having four wheels and be made safe to carry a man weighing two hundred pounds when speeding over the road at the rate of a mile in three minutes or less. That he does is proof of mechanical skill and genius of the highest stamp. If a harness maker he must produce the necessary strappings to insure the retaining of the horse or horses before the vehicle, and in such proportions and forms as to contribute to the beauty of the turnout. This the American harness maker does, and he leads just as supremely in the manufacture of light harness as the carriage maker does in the light carriage; and by his work he contributes his full measure toward making the ideal turnout.

Of the parade itself there is much that can be said that has a local interest, but less for the general public. Along the route of the parade flags and bunting were displayed on many buildings, and small

flags by the thousands were flaunted by enthusiastic spectators. "Old Glory" was everywhere conspicuous on buildings, stands, vehicles, and in the hands of those on foot, and on the crafts on the Harlem river, large and small.

Never was greeting more thoroughly appreciated. Every horse in line seemed to understand the compliment. One million dollars in cold cash would not have purchased the splendid thoroughbreds in the parade. Two hundred thousand dollars is a low, conservative estimate of the value of the wagons displayed in the memorable pageant. And the overcoats. Their like was never seen before, even on the Speedway, where the Beau Brummels of the American turf take their airing. Of the ribbon holders in the great parade, seven out of every ten were robed from hat to heels in overcoats of canary hue, mounted with buttons as large as pie-plates.

There was a significance in the parade lacking at last year's function. Then it was a simple display, barren of substantial honors, but this year the association gave three prizes—one for the best speedway horse and rig, one-man wagon; a second for the best speedway team, one-man wagon; the third for the woman driving the best-looking horse and outfit. The scene at the grand stand, reared in the narrow ridge of rocks between the Speedway and the Harlem river, was picturesque and striking. Two great sculptured horses flanked the structure on either hand, while American flags fluttered from innumerable poles and draped seats and guard rails.

Lieut.-Gen. Nelson A. Miles was the guest of honor. Surrounding him were President Randolph Guggenheimer, Park Commissioners Clausen, Brower and Moebus, Dr. H. H. Kane, president of the Road Drivers' Association; Thomas F. Gilroy, Deputy Chief of Police William McLaughlin, ex-Magistrate Simms, Commissioner James P. Keating, and a dozen others. Of them all the keenest judge and most ardent admirer of thoroughbred horseflesh was Gen. Miles.

Perhaps not more than three-quarters of the four hundred men and horses whose names were listed in the catalogues fell in line, but the vacant places were partially filled by others who had not entered their horses, but were on hand when Sergeant Egan and the eight bluecoats under his command started to clear the way for the parade.

Following the platoon of mounted police came Randolph Guggenheimer and President Kane in a surrey. Former Mayor Thomas F. Gilroy and Paul Dana, the first advocates of the Speedway, were supposed to be the occupants of the four passenger wagons which followed, but Mr. Gilroy's place was taken by somebody else. Then came the grand marshal, Alexander Newburger, driving his chestnut pacing mare Smilax, 2:21 $\frac{1}{4}$ , with one hand, while the other was used to operate a miniature megaphone in issuing commands to the road riders.

Behind him were the officers of the Road Drivers' Association—John F. Cockerill driving Swift, 2:16 $\frac{1}{2}$ , and Charles C. Lloyd, driving Malzour, 2:15 $\frac{3}{4}$ , and Richard B., 2:21 $\frac{1}{4}$ , to pole. The members of the Executive Committee followed, David Lamar driving his gigantic trotter, Azote, 2:04 $\frac{3}{4}$ , leading this division. Mr. Lamar wore a white hat, held white reins and sat in a white geared wagon, making a picturesque turnout.

On their heels moved the New York division—numbering 200 horses—the slowest of which has thrown a mile behind his flying hoofs in less than 2:30.

When the guests' division came along, under the command of Albert De Cernea, who drove the mettlesome bay stallion King Rene, Jr., 2:17, there were delegations from Brooklyn, Staten Island, Jersey City, Philadelphia, Troy and many other centers. Nearly one hundred of these out of town horses were on hand. The fourth division was made up of pairs and single horses hooked to surreys and other light vehicles. Trotters and pacers that have made their names famous in the horse world were numerous in the long line of paraders. Among them were two former champions of pacerdom—Mascot, the first horse to gain a record of 2:04, and Robert J., 2:01 $\frac{1}{2}$ , the pacer that first demonstrated the possibility of 2:00 speed in harness. They were two of the handsomest and most bloodlike horses among all the four hundred. Robert J. looked as well as when he made his record, five years ago, showing more quality than any other animal in line. A. E. Perren drove him for Nathan Strauss.

When the paraders reached the Speedway they found it deep in mud. At the point where the reviewing stand stood, north of Wash-



ington Bridge, the horses sank down to their fetlocks and had to throw weight into the harness to move even the light pneumatic wagons through the quagmire.

The judges were Charles F. Chapin, President of the Flower City Driving Club of Rochester; J. Loudon Snowden, Park Commissioner of Philadelphia; James E. Howell, President of the Road Drivers' Association of Brooklyn; Frank Bowers, President of the Belmont Driving Club of Philadelphia; Col. Isaac L. Goff, President of the Road Drivers' Association, of Providence, R. I.; Capt. James I. Housman, President of the Road Drivers' Association, of Staten Island; William Clark, President of the Pleasure Drivers' Association, of Brooklyn.

It was no easy task for the judges—seven of the most prominent horsemen in the country—to make their selections. Twice the glittering cavalcade of paraders passed in review before the experts reached a final decision. Then to "Sarah Jane," a superb black mare with an eye of fire, went the blue ribbon as the best single Speedway horse. It was a popular verdict, and the crowd cheered like mad as D. N. Wilbur, the lucky owner, bowed his acknowledgments.

W. C. Floyd-Jones, with his dashing team, "Peppina and Knoxena," champions of the Speedway, valued at \$15,000, but not in the market at any figure, captured the ribbon in their class.

To the gallant black Delwood, driven by his blushing and radiant owner, Miss A. T. Phelps, of West Troy, went the third prize—another popular decision welcomed with rapid-fire decision as the news spread along the Speedway.

These were the only individual prizes, but there were banners for the three out-of-town organizations making the best display of turn-outs. Brooklyn captured banner No. 1, Staten Island came next and Hudson County figured in third place close up to the leaders. While their decisions were very generally indorsed as good, the popular choice, as settled by vote among the occupants of the grand stand, was Moth Miller, the unbeaten Speedway favorite, with a record of 2:07 to his credit. Dr. David Randell is his owner.

When the last thoroughbred in the three-mile line had passed the reviewing stand, Alexander Newburger, grand marshal, raised a megaphone to his lips and called: "Policeman George Wood, step forward, please." There was a clatter of horses' hoofs, and Wood, astride a mettlesome bay, dashed to the front. Dismounting, he tossed the bridle to a comrade, and marched into the grand stand with the stride of a grenadier.

"Policeman Wood," said Deputy Chief McLaughlin, as the policeman faced him with military salute, "I have been requested by the Road Drivers' Association to present you with this gold medal, in acknowledgment of your courage, dash and skill displayed in thirteen runaway accidents. I hope you will continue to do credit to yourself and to the department of which you are a member." Under the sun-burned skin Wood flushed. His muscular hand trembled as he strove to pin the medal on his breast. His strong voice faltered when he tried to return thanks. All knew of his wonderful courage and skill, and three cheers were given with a vim.

Policeman Wood's record is one to be proud of. Between June 3 of last year and March 31 he stopped thirteen runaways at the risk of his life. In no case was any one injured, owing to his rare skill in horsemanship and indomitable nerve.

The gallant policeman had no sooner remounted and galloped away with his well-merited medal than Mr. Guggenheimer arose in his place in the grand stand and called for Dr. Kane, President of the Road Drivers' Association and one of the foremost friends of the American trotting horse. Placing a gold watch and massive fob chain in the hands of the astonished doctor, Mr. Guggenheimer said:

"It gives me great pleasure to present to you in the name of this association these two tokens of the high appreciation which your services as President are held. They feebly index appreciation of your efforts in the cause of good roads, fast horses and true sportsmanship. You have contributed more than any other man to the success of this association, which proclaims the belief that the horse is still the king of animals and man's truest friend. I cannot conceive that the time will ever come when a bloodless electric vehicle will be the rival of a horse in the affections of his owner."

The Road Drivers' Association wound up the day with a banquet at which Gen. Miles and other notables were guests.

#### FOR THE KAISER'S YACHT.

THE New Process Raw Hide Co., Syracuse, N. Y., has recently shipped one of its New Process noiseless pinions to Germany, to be used on the private yacht of "Kaiser Wilhelm."

#### THE ROADS OF CUBA AND PORTO RICO.

Attention has recently been directed to the condition of the public highways of Cuba and Porto Rico by a report, that orders have been placed, and additional money is to be appropriated, for a considerable quantity of road rollers and other machinery for use on the two Islands.

Judging from the state of neglect into which the roadways of the two Islands have been allowed to fall during the past ten years, it would seem to be high time that governmental steps were taken to remedy the evils which now form a bar to progress in the interior of both countries.

In Cuba, for instance, internal communication is dependent almost entirely upon a very few poor wagon roads, and still fewer railroads. In Porto Rico the means of internal transportation are also scanty. There are altogether about one hundred and fifty miles of railway on the island, but these are in disconnected pieces, and closely parallel the coast, none extending into the interior. Under the Spanish regime about two hundred and eighty-five miles of military roads were constructed. These roads were well built, and were kept in good repair, so that their condition is at present fairly satisfactory. Of this sort is the road from San Juan to Ponce, with a branch from Cayey to Guayama. There are also fairly good roads from Aguadilla to San Sebastian, and from the port of Ponce to Adjutas. Most of the other roads of Porto Rico, however, are almost impassable, except for the pack trains. This is especially true of those in the immediate vicinity of the cities.

In Porto Rico, possibly, more has been done to improve the system of roadways than in Cuba. General Davis has been giving this subject special attention, and has already expended upwards of a million dollars in the repairing and building of roads. The progress already made, however, is but a beginning in comparison with the work yet to be done before the agricultural interests of Porto Rico can be elevated to the plane desired by every one interested in the welfare of the islands.

The devastating effect of the war on Cuba and Porto Rico is visible in nothing so clearly as in the present condition of the roadways. Compared with those of the other islands of the West Indies, Cuba and Porto Rican roads are strikingly inferior. They resemble we might say the pioneer wagon roads of the United States, those opened by emigrants to the far West, except that these had, of course, the freshly made appearance, while the roads of our new possessions are more conspicuous for decay and disuse than for anything else.

The topographical condition of both Cuba and Porto Rico is distinctly favorable to the organization of an excellent system of wagon roads. In Cuba, the middle portion of the island, including the provinces of Habana, Matanzas, Santa Clara and Puerto Principe, consists of broad, undulating plains and shallow valleys, the land rising only in a few places to any considerable altitude. In Habana, Matanzas and Santa Clara these plains are, or were, prior to the late revolution, in a high state of cultivation, while in Puerto Principe they are, in the main, used for the grazing of cattle.

It is only at the two extremes of the island, in the province of Pinar del Rio on the west and Santiago on the east, that the island presents any considerable or well defined relief features. Throughout Pinar del Rio there runs a range of hills, known as the Cordillera de los Organos, rising in many places to an altitude of more than two thousand feet, and culminating in Pan de Guagaiboa, two thousand five hundred feet above sea level. This is one of the parts of the island presenting serious difficulties to the road builder. Good roads are very necessary, owing to the fact that the slopes of the Organos form the celebrated tobacco lands known as Vuelta Abajo.

Some difficulties are also offered in the province of Santiago, a section also presenting great relief features. Its surface is extremely broken with high, sharp mountain ranges, broad plateaus of considerable elevation, deep valleys—some of them broad, others narrow and resembling canyons. The dominating orographic feature of the province is the Sierra Maestra, which commences at Cape Cruz, south of Manzanillo, extends eastward, closely paralleling the coast, from which it rises abruptly. From Santiago it extends to the east end of the island.

As regards Porto Rico, a totally different structure obtains. Passing across the island from east to west, a little south of the middle, is a broken, irregular range of hills or low mountains, culminating in the peak of El Yunque, three thousand six hundred and nine feet



in height. From the crest of this range the land slopes northward and southward in broad undulations, deeply cut by streams, giving most of the interior of the island a steep, hilly surface, gradually becoming more nearly level near the coast, where it spreads into broad level playas. The coast is low and for the most part simple, with few good harbors. Unlike that of Cuba it is not bordered by fringing reefs or inlets.

In view of the work contemplated in this direction in the future American manufacturers of road machinery and supplies would do well to keep in close touch with the authorities having charge of public improvements. Orders are constantly being placed for these goods, and, as already stated, many more will follow when the affairs of the islands are in better running condition.

#### RELATION OF ADVERTISING TO THE COST OF GOODS.\*

ONE of our representatives a short time ago suggested that perhaps the recent change in price was made necessary by the large expenditure we are making in advertising, and he made the suggestion that we give less advertising and a lower price.

Now, good advertising, as I have tried to explain during this session, does not make goods more expensive. Good advertising will lower the cost of doing business, and if it does not do this it is not good advertising. I want everybody to feel perfectly satisfied on this point.

We are often thus accused of making our prices high on account of our advertising.

The fact is, if we did not do so much advertising and do it so well, our prices would have to be higher.

To me, a proposition to increase advertising expenditures, or, let us say, to do better advertising in order to lower prices, would be more practical than a proposition to do less advertising to accomplish the same object.

Our advertising expenditure for the past year, while it was considerably larger in the aggregate, was materially lower in percentage to sales than it has been for many years past. Such results are what we aim to achieve in this department, and they are largely dependent upon the character of the advertising and the care with which it is put into effect.

Take as an illustration a man who is doing a business of \$100,000 per annum, and let us suppose his expenses are \$25,000, which is 25 per cent. to his sales. He wishes to increase this business and he decides to advertise. Let us suppose that he decides on an expenditure for this purpose of \$7,500 per annum. His expenses are then increased to \$32,500. By this expenditure, let us suppose, he is able to increase his sales to \$130,000, and at this rate his expenses with advertising added would amount to same percentage as before, namely, 25 per cent. He has not increased the percentage of his expense and has sold \$30,000 more goods, and if his net profit was 5 per cent. he has increased his net earnings by \$1,500. The amount I have named for advertising such a business should bring even larger results.

What I want to make plain is that advertising well done does not increase expenses, but will lower them. That is the way we figure in our business.

We watch the results in a very thorough and careful manner. Each division and every department is charged with the amount of the advertising, and the amount spent in this way is constantly compared with the sales. If the sales warrant the expenditure it is all right, but if the results are not forthcoming, then there is something wrong.

An advertising report is furnished by each division quarterly. It shows the cost of each different line of advertising for each line of goods. It shows the amount of advertising used and the amount on hand, and it shows the total amount compared with the total sales. It takes a great deal of time and money to get up this report, but only in this way are we able to watch results and determine what is profitable and what is not.

We are not going to throw away any money on advertising if we can help it.

Our advertising has been a great help in building up this large business, and it has enabled us to increase our output and give us as low a cost as we can expect.

\* Portion of an address delivered by Managing Director Cottingham at the recent convention of the representatives of the Sherwin-Williams Co., at Cleveland.

#### MESSRS. JAMES HENDERSON & CO.'S FESTIVAL.

THE fourteenth annual festival of the employees and friends of Messrs. James Henderson & Co., coach builders, Glasgow, Scotland, was held in the Albert Hall, Bath street, on Friday, March 8th. Mr. Alexander Henderson, late President of the Institute of British Carriage Manufacturers, presiding.

The chairman in his opening address, having expressed pleasure at seeing so large a gathering, and also his thanks to the employees and staff for the magnificent marble tablet they erected in the necropolis to the memory of his brother, the late Mr. A. K. Henderson, said they were having an anxious time at North street owing to the coming International Exhibition. He trusted, however, that by putting their best foot forward, and by using every possible effort in their power, they would be able to show the country, and the world at large, there were no better carriages than those built in Glasgow. Glasgow coach builders he knew had no superiors in the trade anywhere; yet having regard to the ever increasing trade competition in this fine art branch, it was imperative that by every means open to them they should keep abreast of the times. He regretted that in the forthcoming exhibition Glasgow coach builders were not to be met by rivals from other towns and countries. The chairman referring to the important question of technical education said he was sorry that they must now look forward to the new generation of coach builders to take up the matter. The town authorities, and the Glasgow and West of Scotland Technical College were beginning to see the importance of the question, and while the enthusiasm was spreading through the land for technical education they should see that they should share in it. He should very much like trying again to get facilities for the starting of a coach building class; in London they had such a class, and it was a treat to see the work that was being done there. The last time he was there the students were building a brougham; they were doing far better work in the London school than they were doing in the Paris school, and they must adopt the facilities of technical education if they were determined to keep to the front. In the course of his address the chairman alluded in touching terms to the memory of his brother, the late Mr. A. R. Henderson. Many of those present, he was sure, could bear testimony to his great merits as a master mind in the coach building profession. No one knew better than he the tout ensemble relative to a carriage; his experience and practice of the trade had been wide and varied; he had worked at the benches of the best coach builders in London and Paris, and he (the chairman) had lost in his death a brother whose attributes he could not adequately eulogize in speech. *Great applause.* A very enjoyable concert and assembly followed.

#### BAVARIAN VS. CEYLON GRAPHITE.

THIS mineral, which is now so much in request as a lubricator of machinery, is one of the most valuable products of Bavaria, and, like lithographic stone, represents almost a monopoly for the country, as the only formidable competitor in the supply of natural graphite is the Island of Ceylon. The production of graphite in Ceylon has, however, diminished from 30,000 tons to some 12,000 or 15,000 tons annually, causing a great rise in prices, as the deficit could not be made good from other sources. The price of Ceylon graphite ranges from \$250 to \$375 per ton. In Bavaria, the graphite deposits are found near Passau and are inferior to the Ceylon graphite, as, while the latter is nearly pure, the former has about 60 to 75 per cent. earthy substances mixed with it. The Passau graphite, however, can be purified by a very simple and inexpensive process, and a substance produced that is quite equal to the Ceylon graphite. Unfortunately, owing to local conditions, this process is little used, as the deposits are divided among a number of proprietors, who work on a small scale in the cheapest manner possible. The result is that there is great waste of the raw material, and it is alleged that nearly 90 per cent. of the mineral is absolutely thrown away, owing to this unscientific and short-sighted system of working, which must lead to the premature exhaustion of the deposits. In 1898, there were 49 graphite works in Bavaria, employing only 216 men, which produced 4,593 tons of graphite, worth \$97,915.

OLIVER J. D. HUGHES, Consul.

Coburg, January 19, 1901.

EVERY man knows something worse about himself than any one can tell him.—*La Rochefoucauld.*



## THE PAN-AMERICAN EXPOSITION.

THE Exposition Company has issued an illuminated booklet descriptive of the Pan-American Exposition, *its purpose and its aim*. This pamphlet contains full page colored illustrations of the ground plan, bird's-eye view, and all the exhibition buildings, together with marginal and other half-tone reproductions of detached ornaments, figures, etc. The work is finely gotten up and is well worth being preserved for future reference. These booklets will be sent to parties asking for them, so long as the edition lasts.

## EXPOSITION DEDICATED.

IN the presence of a large concourse of citizens and visitors the Pan-American Exposition was formally opened on Monday, May 20th. Buffalo made a holiday in honor of the occasion. The officials and a large number of distinguished men, including Vice-President Roosevelt, Lieut.-Gov. Woodruff, U. S. Senators Hanna and Lodge, Foreign and State Commissioners, met at the City Hall, and were escorted from there to the Exposition grounds by a military parade of regular troops and local militia numbering about 2,000. One hundred carriages followed, containing officers and guests, after these came the parade of the Midway concessionaires, a novel and interesting array, in which Western Indians and people from the Orient and Mediterranean intermingled.

On the arrival at the grounds, the parade halted near the Temple of Music, and at the end of the Esplanade several thousand carrier pigeons were suddenly released. Confused at first by their own numbers, they circled low in wild flight and then gradually soared upward on graceful wing.

High up, where they got their bearings, they parted and took flight to every quarter of the compass. The Vice-President and party then filed on into the Temple of Music, and the parade reforming, marched on through the grounds.

The formal dedicatory ceremonies, in the presence of a crowd limited only by the size of the hall, were impressive. There were strong words for closer union among the American republics, and the remarks of Vice-President Roosevelt on that point and the congratulatory telegrams from President McKinley and Presidents of the American republics excited the greatest enthusiasm.

Senator Lodge also made an address, which was received with storms of cheers.

All of the American republics were represented at the dedication, and their military attaches and commissioners were given conspicuous places in the group of special guests. Friendly expressions came by cable from national neighbors.

During the ceremonies a poem was read by Frederic Almy, of Buffalo, dedicated to *King Toil*, of which the following is a portion:

PAX, 1901.

A king is crowned on this May day  
With pomp beyond the dreams of kings;  
From pole to pole extends his sway,  
And half a world its tribute brings.  
With throbbing flags instead of drum,  
With flashing streams instead of sword,  
King Toil, the king of kings, has come—  
Of all mankind the hope and lord.  
And Beauty comes, as queen of Toil,  
To share his rainbow jubilee;  
Art tempering use, as a sweet foil;  
A bow of hope across our sea.  
We pledge the century which shall close  
A great millennium's splendid page,  
And lead Man, conqueror o'er old foes,  
To the new tasks of a new age.

The night illumination was brilliant in the extreme. The total admissions of the day were 101,678, not including those in the parade.

## STUDEBAKER BROS. MFG. CO.

AMONG the exhibits at the Pan-American Exposition which will attract attention are those of the Studebaker Bros. Manufacturing Co., South Bend, Ind. They will have four interesting exhibits: Two in the Ordnance Building, where will be displayed army wagons, ambulances, officers' wagons, and such as are used by the United States Government. One in the Stadium, where will be displayed the Studebaker farm wagon, which for a half century has stood the test of time, and other vehicles of their make for use on the farm. One in the Transportation Building, where a general display will be made of up-to-date vehicles of their make for use for pleasure and business. Their general headquarters will be established in this building, where a most cordial welcome will await you, your family, and your friends.

## IMPROVEMENT IN BRAZILIAN CABLE SERVICE.

IMPROVEMENTS of an important character, materially affecting the facility and cost of cable communication between Brazil and the United States, have been made by the Western Brazilian Cable Company. As a result of the new line opened by the Commercial Cable Company from New York to the Azores Islands, connecting with the line from Brazil via Lisbon, messages can now be sent without the delays incident to the crush of business in the London offices, which formerly had to handle all the Brazil communications. The managers of the large coffee houses here, who use the service constantly in their business, say that the new lines have proved very beneficial. In addition to the increased facilities, an advantage has been gained in the cost of transmission. The rates have been reduced on an average 25 per cent. Formerly, the charge per word from Rio de Janeiro to New York was nearly \$1.30; now, it is about \$1. The average time for a word in transmission between the two places is from eighteen to twenty-five minutes. Messages have come through in twelve minutes. The company sends all messages by Lisbon and the Commercial Cable Company's line, unless another route is specified by the sender.

The consolidated company operating here under the name of the "Western Cable Company" is a union of the Western Brazilian and the Brazilian Submarine. It has three cables from Pernambuco to Rio de Janeiro, two from Pernambuco to Para, two from Pernambuco to London and one from Pernambuco to Lisbon. Connections are made with all the important ports from Para to Montevideo. The charges per word are based on the average rate of exchange for every three months, as determined by the Brazilian Government. At present it is 900 reis to the franc (19.3 cents), and if exchange remains above 11d,\* it will soon be considerably less.

The following rates may be of interest:

|                                                                                               |               |
|-----------------------------------------------------------------------------------------------|---------------|
| Canada, New York City, Boston, Baltimore, Philadelphia, Washington, Chicago, and New Orleans. | 4.68 = \$1.00 |
| Barbadoes.                                                                                    | 8.91 = 1.91   |
| St. Thomas.                                                                                   | 9.18 = 1.96   |
| Havana.                                                                                       | 5.45 = 1.16   |
| Trinidad.                                                                                     | 9.27 = 1.98   |

EUGENE SEEGER, Consul-General.

Rio de Janeiro, March 9, 1901.

## RAIL ROADS OF COLOMBIA.

ACCORDING to official information, there were in the Republic of Colombia, at the close of the year 1900, 605 kilometers (376 miles) of railroad, distributed as follows in eight of the nine Departments:

*Department of Antioquia.*—A constructed line 68 kilometers (42 miles) long from Puerto Barrio, on the Magdalena River, to Caracoli. This railroad is being built by the departmental government of Antioquia, assisted by the National Government, and is destined to reach Medellin, capital of the Department and a center of much commercial importance. The length of line as surveyed between Puerto Barrio and the city of Medellin is 190.37 kilometers (118 miles). It has already been constructed beyond Caracoli, but that city is the present inland terminus of operations. The main office of the company is at Medellin. This railroad was located and in part constructed by the late Francisco J. Cisneros, a citizen of the United States, and its manager and chief engineer until recently was Mr. Whitteken, also a citizen of the United States.

*Department of Bolivar.*—A railroad 107 kilometers (66 miles) long between the city of Cartagena and the port of Calamar, on the Magdalena River constructed and operated by the Cartagena-Magdalena Railway Company, an American corporation, of which Francis R. Hart, of Boston, Mass., is president, and J. T. Ford, of Cartagena, Colombia, is vice-president and general manager. In the same Department, a railroad 45 kilometers (28 miles) in length connects the city of Barranquilla with Puerto Colombia, also known by the name of Sabanilla, through which port Barranquilla's ocean shipments are made.

*Department of the Cauca.*—A Government railroad 40 kilometers (25 miles) in length, running from Buenaventura, on the Pacific Ocean, to San José. The road is intended to reach the city of Cali, 138 kilometers (86 miles) from Buenaventura. The work of constructing the railroad goes on, but it is not expected to be completed

\* 11d. (22 cents) to the milreis 1,000 reis.



to Cali before the expiration of about seven years. This line already renders very valuable services, and its importance will be very considerably increased when it shall have reached the last-named city, the heart of the rich valley of the Cauca.

*Department of Cundinamarca.*—This important Department, in which is situated the capital city—Bogotá—has four railroads in operation. The Savanna Railroad, between Bogotá and Facantiviá, is 40 kilometers (25 miles) in length. Passengers and freight between Bogotá and the Atlantic coast make use of this line, which forms an indispensable link in the chain of communication. The road is the property of the National Government. The Northern Railroad connects Bogotá and the city of Zipaquirá, where are located some of the most remarkable salt mines in the world. Its length, as constructed and in operation, is 60 kilometers (37 miles). An extension of this line to the Magdalena River, at a point well below Honda, is perfectly feasible and would be the beginning of the solution of the transportation problem between the city of Bogotá and the Atlantic coast. The Southern Railroad, between Bogotá and Soacha, has a completed length of 11 kilometers (7 miles). The Giradot Railroad is in operation from the port of that name on the Upper Magdalena River to Juntas de Apulo, a distance of 40 kilometers (25 miles). Bogotá is contemplated as the interior terminus of this road, which would make the total length of line 155 kilometers (96 miles). Construction work has already been effected as far as Hospicio, and would have been carried farther if the war had not interfered.

*Department of the Magdalena.*—A railroad 67 kilometers (41.6 miles) long, extending from the city of Santa Marta, on the Atlantic coast, to the Sevilla River. The contemplated interior terminus of this line is El Banco, on the Magdalena River, a distance of 375 kilometers (233 miles).

*Department of Panama.*—The Panama Railroad, between Colon and the city of Panama, 78 kilometers (48 miles) in length, owned by an American corporation, with headquarters in the city of New York.

*Department of Santander.*—The Cucuta Railroad, between San José de Cucuta and Puerto Villamizar, on the Zulia River, on the Venezuela frontier. This road is 55 kilometers (34 miles) in length.

*Department of the Tolima.*—The Ladorada Railroad, between Ladorada and Arrancaplumas, 34 kilometers (21 miles) in length. This road is the property of an English corporation, and was built to avoid a dangerous stretch of river navigation in the vicinity of Honda. Arrancaplumas is, in fact, a suburb of Honda. The Tolima Railroad, which has 3 kilometers (1.8 miles) constructed and in operation, is intended to connect the important city of Ibagué with the port of Giradot, 60 kilometers (37 miles) distant, on the Upper Magdalena River. There are no indications of an early resumption of work on the last-named road.

CHAS. BURDETT HART, Minister.

Bogotá, March 8, 1901.

#### SOUTH AMERICAN STEAMSHIP SERVICE.

CONSUL GREENE, of Antofagasta, under date of December 19, 1900, notes the extended service of the Compañía Sud Americana de Vapores (a Chilean company with headquarters in Valparaiso) and the Pacific Steam Navigation Company (a British company with headquarters in Liverpool), working jointly on the Pacific coast, to San Francisco, as already printed in the *Consular Reports*. Some years since, the consul adds, the route was extended from Panama to Ocos, in Guatemala. This weekly service is continued, but San Francisco steamers leave Valparaiso for that port only once a fortnight. He continues:

The Kosmos steamships, of Hamburg, leave Valparaiso once a month, calling at a smaller number of ports. Their trade is mostly freight, and they have not much accommodation for passengers. The new service will render valuable aid to trade. The steamers are large and have good accommodation for passengers and freight of all sorts, including healthy space for 500 head of cattle.

It is a matter of regret that the Pacific Steam Navigation Company is not American, as could easily have been the case. It was organized in England fifty years ago by William Wheelwright, of Newburyport, Mass., after his efforts to organize a company in New York had proved unavailing.

#### RECIPROCITY TREATY BETWEEN CHILE AND NICARAGUA.

MINISTER MERRY transmits from San José, March 29, 1901, translation of parts of the recent reciprocity treaty between Chile and Nicaragua, according to the terms of which the following articles are exempt from customs duties in Chile: Unrefined sugar of any grade and color, coffee, tobacco, unmanufactured, medicinal plants and herbs, indigo, rubber, cacao, dyewoods, cabinet and building timber. In the open ports of Nicaragua, fine wines, flour, fruits and vegetables (fresh, dried or preserved, in paste, dry, and pressed), potatoes and saltpeter are exempt. The customs authorities and consuls of each country shall certify the shipments. Vessels of both countries shall be considered for the purpose of coastwise commerce as though they were under their own flag. If either country makes a treaty of the same character with another country, excepting Venezuela, Ecuador, and Central America, this treaty is without effect if the other country so desires. The duration of this treaty shall be five years, counting from the date of its ratification.

The minister believes that trade between the two countries will be materially extended by this treaty.

#### GERMAN SETTLEMENTS IN SOUTH BRAZIL.

VICE-CONSUL GENERAL MURPHY transmits from Frankfort, April 6, 1901, a translation of an article in a Berlin paper, as follows:

"Reports of a contradictory character have from time to time been received in Germany relative to the actual condition of the German settlements in southern Brazil. It is, however, beyond doubt that a large number of Germans have settled there, and that their colonies are prospering and growing. Unfavorable reports in regard to political and industrial difficulties encountered by German settlers in Brazil continue, however, to interfere with the thorough and carefully formulated plans of the Hanseatic Colonization Company, whose work is being accomplished more slowly than is demanded by the interests of these German colonies, which are so closely connected with Germany by racial ties. A new handbook for emigrants, entitled *German Colonial Life in the State of San Catharina*, in South Brazil, will, it is believed, remove all doubts in regard to this portion of South America, where already almost one-third of the population is German. From this book, it appears that at present the German colony 'Hansa' offers special attractions to settlers. The German colonists live in settlements of their own, which are governed by officials who are Germans."

#### CART-ROAD CONCESSION IN NICARAGUA.

CONSUL DONALDSON, of Managua, March 21, 1901, informs the Department that Mr. E. W. Perry, in behalf of a United States syndicate, has secured a contract from the Government of Nicaragua, to construct three cart-roads, leading, respectively, from Matagalpa, Nueva Segovia and the Pis-Pis mines, in the Cabo Gracias district, to the head of steamboat navigation on the River Coco Wanks or Segovia. The roads are to be completed and delivered five years from the date of ratification by the Nicaraguan Congress.

In payment, the Government of Nicaragua will grant Mr. Perry alternate lots, 2 kilometers square, of public lands contiguous to the proposed routes.

This syndicate, says Mr. Donaldson, has just purchased the exclusive right to navigate the Coco Wanks, and, in order to place their steamer service on a paying basis, will build these roads to bring down to the river the products of that section of the country.

The consul adds that the Coco Wanks is the largest stream in Nicaragua, being navigable to a series of rapids 160 miles from its mouth, at which point the cart roads will converge.

#### NOT GUINEA, BUT GUIANA.

IN our notes on the Pan-American Republics, in May HUB, the proof-reader took liberties with copy and made us say British, French and Dutch Guinea, instead of British, French and Dutch Guiana. Not having heard that the Guineas have been transferred from Africa to South America, we will not attempt to rearrange the map of the world, and therefore call attention to the error.



## Automobile Department.

### *AUTOMOBILE COMPANY OF AMERICA STANHOPE PHAETON.*

(See "Latest Styles.")

THE Stanhope phaeton shown is one of the above-named company's standard vehicles, and one that has proved its merit at several exhibitions. The motor is of triple cylinder design, compact in form and very powerful. The vaporizer, supplying the three cylinders, is of the constant level type, and the ignition is by a jump spark. Two forward speeds and the six-mile reverse are enclosed in a dust-proof case. All intermediate speeds are obtained by throttling the mixture, and this tiny throttle effects the changes instantly. The motor, transmission gear, tanks, and body are fastened to the bar-iron frame, and this entire weight is carried by four semi-elliptic springs between the axles and the frame. Great flexibility of wheel support is thus obtained. These are ideal touring carriages, the tank capacity of both water and gasoline being sufficient for a day's journey. The radiating coils under the tool boot in front reduce the amount of water to be carried four-fifths. No oil cups are seen, and the wheels and shafts have roller bearings. Steering is done by a side lever, thus insuring quick action. Foot pedals control the reverse clutch and the brakes on the rear hubs, and the 32 in. wooden wheels have 4 in. tires. The commodious tool and parcel boot, and the handsomely upholstered seat and top, the whole superbly finished, complete an automobile which seems to meet every requirement. The company's plant is located at Marion, N. J.

### *DE DION-BOUTON MOTORETTE.*

(See "Latest Styles.")

THE De Dion-Bouton motorette, illustrated this month, is designated by the manufacturers as 1901, Model No. 2. This is arranged for four passengers, but the back of the front seat is so constructed that it can be turned down, so as not to obstruct the view when two are riding. Much care has been taken in the design, and construction of this motorette to insure comfort and an attractive appearance. The wheels are of the standard diameter, and are provided with plain bearings. The trimming may be leather or cloth, according to the wish of the purchaser. The company is located in Brooklyn, N. Y.

### *DELIVERY WAGON.*

(See "Latest Styles.")

THE delivery wagon illustrated this month represents a line built by the Automobile Co. of America, at Marion, N. J. This is a handsome covered vehicle with wire grided doors opening at the rear, and wooden wheels with solid rubber tires. As the best workmanship and material only are employed in its construction, the claim of the company, "first class," is readily acceded.

### *HAMPDEN AUTOMOBILE.*

(See "Latest Styles.")

THIS machine, built by the Hampden Automobile & Launch Co., of Springfield, Mass., was designed by J. Frank Duryea, who was mechanical engineer for the Duryea Motor Wagon Co., and who designed for the Duryea Co. the carriages that won all road contests entered by them. The carriage weighs 800 pounds when ready to run, and although light it is built to stand hard service. The carriage is fitted with a nicely balanced motor, and motor starting is readily accomplished from the seat. The vehicle is a splendid hill climber, and its work in this respect can only be appreciated by seeing it. It is fitted with three speed changes and reverse. It carries a very small quantity of water, which does not boil at any time. Makes twenty-five to thirty miles on a gallon of gasoline, and carries six gallons.

### *KIDDER DELIVERY WAGON.*

(See "Latest Styles.")

THE heavy delivery wagon illustrated this month is one of the styles of vehicles built by the Kidder Motor Vehicle Co. of New Haven, Conn., the motive power being steam, the fuel ordinary stove gasoline. The general features of construction by this company was given in March HUB. This vehicle differs only in points made necessary by its increased size and the use to which it is to be put.

### *LOOMIS ROAD WAGON.*

(See "Latest Styles.")

THE illustration shows Model No. 2, a regular road wagon with full standard track. Its running gear is constructed of steel tubing and all bearings, including steering device, have two rows of ball bearings. The body of this wagon, with the exception of about one foot in width under the seat, is entirely free for the carrying of luggage or small parcels. It is thoroughly upholstered with the finest material, and is equipped with a powerful double cylinder motor. It is equipped to run 150 miles without refilling. Absolutely no water is used in this machine, and it can therefore not freeze in winter. Manufactured by the Loomis Automobile Co., Westfield, Mass.

### *DEMONSTRATION CARRIAGE OF THE UPTON MACHINE COMPANY.*

(See "Latest Styles.")

THIS runabout was built by the Upton Machine Co., New York City, to demonstrate the Upton transmission gear. It is equipped with a 3½ H. P. De Dion-Bouton motor. The exhaust after leaving the muffler passes into the reaches, which are perforated on the underneath side, allowing for distribution of the exhaust along the whole length of the reach instead of at the rear of the carriage. It is controlled by the single lever shown opposite the seat and a foot lever placed in the floor of the carriage. The gasoline tank is placed behind the cushions which form the back of the seat. The water for cooling is carried in a tank in the body.

### *OLDSMOBILE.*

THE Olds Motor Works of Detroit, Mich., are handling a gasoline mobile which they sell for \$600. This price is so low that the buyer may fear that quality has been sacrificed; but this is far from being the case. The Olds people have been handling gasoline engines since 1885, at which time they built their first shop, a 18 by 26 foot building, from which has grown the immense plant, now covering six and a half acres of floor space. Their long experience and scientific study of gasoline motors has eminently fitted them for applying these motors to automobiles, and they are thus enabled to produce thoroughly reliable and high grade motors at a moderate expense. Their Oldsmobile weighs 580 pounds, and will support a load of 2,000 pounds without injury. One gallon of gasoline will suffice for a forty-mile run. The body is mounted low, being independent of the motor, which is four horse-power, and under most favorable circumstances can be run up to six horse power. In the construction of the motor simplicity and durability have been studied. Ball bearings and other modern appliances are used wherever they can be made serviceable. The company have issued a neatly illustrated catalogue, which will be sent to applicants without charge.

### *NOW WITH THE MILWAUKEE AUTOMOBILE CO.*

JOHN A. BECHTEL, member of the American Society Mechanical Engineers, for a number of years past superintendent and secretary of the Hawley Down Draft Furnace Company, and recently general manager of the Baldwin Automobile Manufacturing Company, has connected himself with the Milwaukee Automobile Company, convinced that the vehicles manufactured by this company are equal to any other steam vehicles made. We are informed that this company is so crowded with business that they are now running their factory double turn, twenty-three hours every day.



## CONDITIONS UNDER WHICH THE FIRST ANNUAL ENDURANCE CONTEST OF THE AUTOMOBILE CLUB OF AMERICA WILL BE HELD.

- 1.—That a 500-mile endurance test of automobiles be held during the week commencing September 7th, 1901.
- 2.—That the official route of the trial be from New York to Buffalo, and that the trial terminate at Buffalo.
- 3.—That the total distance be divided into "stages" for each day, on the basis of covering approximately 85 miles per day, but that the division of distance be left to the discretion of the committee:

|                                                                                                                    | MILES. |
|--------------------------------------------------------------------------------------------------------------------|--------|
| First Stage—From Clubhouse to Poughkeepsie, approximate distance .....                                             | 90     |
| Second Stage—From Poughkeepsie to Albany, approximate distance .....                                               | 70     |
| Third Stage—From Albany to Little Falls, including a Hill Climbing Trial, near Little Falls, approximate distance. | 85     |
| Fourth Stage—Little Falls to Syracuse, approximate distance .....                                                  | 85     |
| Fifth Stage—Syracuse to Rochester, approximate distance..                                                          | 90     |
| Sixth Stage—Rochester to Buffalo, approximate distance..                                                           | 80     |

Total approximate distance..... 500

The trial to start on Monday morning from the clubhouse, and to finish at Buffalo on a Saturday afternoon on the same week.

- 4.—That this contest be opened to all classes of self-propelled vehicles, but that no manufacturer, agent or private owner be allowed to enter more than three vehicles in any one class.

### CLASSIFICATION AND DIVISION.

- 5.—Vehicles shall be divided into five classes or divisions, and all four wheeled vehicles shall carry two or more persons. Following are the classes:

Under 1,000 Pound Class.—Four wheeled motor vehicles weighing under 1,000 pounds, in commercial running and operating condition, with all tools, fuel and supplies on board.

1,000 to 2,000 Pound Class.—Four wheeled motor vehicles weighing between 1,000 and less than 2,000 pounds, in commercial running and operating condition, with all tools, fuel and supplies on board.

2,000 Pound or Over Class.—Four wheeled motor vehicles weighing 2,000 pounds or over, in commercial running and operating condition, with all tools, fuel and supplies on board.

Motor Cycle Class.—Motor bicycles, motor tricycles and motor quadricycles.

Public Service Class.—Public conveyances and freight conveyances. These shall carry a minimum weight of 750 pounds, exclusive of their driver.

- 6.—That the conditions of this endurance test shall be average speed for the six days, and any competitor falling below an average of eight miles per hour for any one period shall not receive any credit for that period.

Certificates shall be awarded by the club as follows:

- A. Certificate, average speed from 12 to 15 miles per hour.
- B. Certificate, average speed from 10 to 12 miles per hour.
- C. Certificate, average speed from 8 to 10 miles per hour.

That no average speed in excess of 15 miles per hour shall be recognized.

Public service vehicles shall receive a certificate stating their average speed, which must not be less than eight miles per hour, and the weight carried shall also be stated in the certificate.

- 7.—All vehicles, whether electric, steam or gasoline, or otherwise, shall operate in the same class, divided only as designated by weight.

- 8.—Controls are to be officially established at the start of each day's run, at the lunching places and at the finishing places of each day's run. The start is to be made each morning at 8 o'clock, and an hour and a half allowed for lunch.

- 9.—Controls are also to be established on the hill climbing trial near Little Falls, which trial will be a separate matter.

- 10.—The test is to be under the charge of a committee to be designated by the club, and they to have entire charge of the details and control of the run from time of start to finish, and shall render their report to a board of judges of not less than three, who shall make the awards and decisions, such judges to be appointed by the Board of Governors, and to be entirely disinterested from any manufacturer or allied interests in the automobile line.

- 11.—The entrance fee for all classes, motor cycles excepted, shall be \$50 for each vehicle. In the motor cycle class the entrance fee shall be \$25 for each vehicle..

- 12.—An official catalogue is to be issued by the committee giving detailed information of the trial, such as rules and regulations governing the trial, names, addresses and tariffs of the hotels where stops will be made, places where vehicles will be stored over night, gasoline agents and map of the entire route of the trial, also such other information as may be advisable and necessary. Advertisements will be allowed in this catalogue, under the direction of the committee in charge of the run, and no manufacturer to be allowed to take or purchase more than one page for advertising purposes in such catalogue.

- 13.—That suitable direction posts be erected along the entire route of the trial, similar to those that are proposed to be erected between New York, Boston, Albany and Philadelphia; these posts to be permanent and to be erected under the supervision of the Automobile Club of America, in co-operation with other clubs, along the route of the trial.

- 14.—That the friendly co-operation and assistance of the police and village, town, city and county road commissioners along the route of the trial be secured as far as practical and possible.

- 15.—That each competing vehicle have securely attached to it in a conspicuous position, an official number corresponding with the said number in the catalogue, and that no other marks or signs other than the manufacturers usual name or number plate, as fixed to a vehicle as sold to a customer, be allowed during the period of the trial.

- 16.—That the trial committee officially issue from time to time to the technical press such information regarding the trial as may in their opinion be considered advisable.

- 17.—The penalty for a vehicle being towed in any period shall be disqualification for that period.

## SPEEDING AUTOMOBILES.

So much space has been devoted during the last few weeks to a description of the aggressive action of some notoriety seeking automobile owners, by the New York city papers, that the public is liable to believe that all automobile owners are the enemies of every other person who has to use the public highway.

The idea that, because the automobile is the newest arrival on our public roads, it is equipped with the wheels of progress and must annihilate all other means of locomotion, seems to have taken root in the minds of some men, who find this almost as good a way to keep their names in the daily papers as actresses find the divorce courts.

The following resolution speaks for itself. It is the reasonable expression of gentlemen who have not become imbued with the impression that the possession of an automobile is the excuse for a most unreasonable display of selfishness.

At a meeting of the Long Island Automobile Club, held at the club house on Wednesday evening, May 8th, 1901, the new amendments to the Highway Act of the State of New York, known as the Doughty Bill, were discussed, and the following resolution passed:

Whereas, The passage of the Doughty Bill, giving the automobile equal rights with the horse-drawn vehicle in the public parks, is received with satisfaction by the Long Island Automobile Club, out of consideration for the driving public, and believing that the use of Prospect Park by motor vehicles should be confined to the West Drive, now and under the liberal management of the Park, heretofore set apart for their use; be it

Resolved, That all members of the Long Island Automobile Club be instructed and all other motor vehicle drivers be requested to use the West Drive exclusively, reserving the East Drive for horse-drawn vehicles; and, be it further

Resolved, That a copy of this resolution be mailed to each member of the club, to all other automobile clubs, the Park Commissioner and the public press.

By order of the Board of Governors.

We cannot help feeling that there is some hope for a concerted action for good roads now that gentlemen are beginning to take an active interest in this newest of sports.

## NOW LOCATED AT UTICA.

THE Remington Automobile and Motor Co. announce that their business has recently increased to such proportion as to compel them



to seek larger factory quarters, and they have therefore arranged to remove their entire plant to the city of Utica, N. Y. Their address in Utica will be No. 43-45 First street, and request that further correspondence be sent to that address.

#### FIFTY HORSE POWER AUTOMOBILE.

WILLIAM T. DANNAT, a well known American artist residing in Paris and the newly created Commander of the Legion d'Honneur, received a day or two ago from the Daimler (Cannstatt) Company a new machine of the Mercedes type, which is said to be the most perfect yet made.

"What its merits are," said Mr. Dannat, as we were seated in front of a blazing fire in the reception room at his studio in the Avenue de Villiers—a fortune in pictures hanging on the walls—"I cannot say, but the machine is considered by the makers, with that already delivered to M. Lemaitre, the well known sportsman, to be the fastest and most powerful thing in the way of automobiles in existence.

"The constructors give its force as being fifty horse power and its maximum speed 120 kilomètres per hour. Personally I have as yet had no opportunity of testing the accuracy of these assertions, but I have had a spin or two—under limited conditions—and I and my mechanists are simply surprised.

"This carriage in its racing trim—and, mind, I am only again quoting the constructors—should weigh about ten hundred and fifty kilos. but as to its being the 'type définitif' and completely 'au point,' of this I am certain, for it is the first of a series, limited in number, which will be turned out by the Cannstatt firm during the next few months."

A short drive took us to Messrs. Rothschild's establishment, where Mr. Dannat's automobile was ready and the mechanist in attendance. It was in its racing form—not that its owner means going in for any of the classic contests—with two comfortable seats in front. A "spider" can, however, be fixed behind, transforming it into a four place carriage.

Painted red, picked out with yellow and with highly polished brass fittings, it looked exceedingly stylish, and by its low build and great length, altogether different from the machines one is accustomed to see.

While criticising its proportions, who should arrive on the scene but M. Charley, the Paris representative of the Daimler company.

"This machine," he said, "is certainly the most perfect which the firm has yet constructed, and, for the time being, I do not think it will try to improve upon it. Its build, as you remark, is novel. The height of the 'chassis' from the ground is but 57cm., and that of the motor 1m. 5 cm. The length from axle to axle is 2m. 25cm., and from spring end to spring end 3m. 30cm.

"The steering gear is 'irreversible,' and no small object in the road can put the carriage out of its line. The steering wheel acts directly on the centre of the hub, and when the carriage is standing still it is impossible to turn the front wheels without its aid. One could pass over a dog in the street and the steering wheel would keep its place.

"This is one feature. Another is that there are four cylinders, each independent of the other, which can be used progressively, according to the speed required, the benzine consumed being in proportion.

"The sparking is electric and is obtained by a magneto-dynamo, the spark being produced by the natural action of the motor—this doing away with accumulator, batteries and induction coil.

"The cooling apparatus is also a new idea, and is ingenious. A fan of a novel kind is worked by the motor, and seven litres of water only are required for a fifty horse power machine.

"There are four brakes, each with water canalization to keep them from heating. The tires are solid 'Continentials' of 120mm., these being the best preventives of skidding. The wheels are of the usual make, but instead of having ball bearings—balls being liable to break—they work on rollers."—*New York Herald*, April 3.

#### DE DION SUPPLIES.

THE De Dion-Bouton Co., of Brooklyn, N. Y., announce that the supply and accessory business developed so rapidly last season that they were severely handicapped by not having sufficient stock on hand to meet requirements. This department of their business has now reached such large proportions that they have arranged to

give it special attention, and profiting by previous experience are now carrying a very large stock of genuine De Dion supplies and accessories for the retail and manufacturing trade. These goods have met with much approval from automobile manufacturers in this country, and we are now supplying regularly induction coils, batteries sparking plugs and other accessories to the largest builders in America. They are also putting up a special cylinder oil that is well adapted to all motors of De Dion type. This is a very smooth mineral oil of high test. After careful experiment they have arranged to put it up under their own name, which fact is sufficient guarantee of its quality. They are also putting up a special gear and bearing grease, which is particularly well adapted to "Motorette" and motor cycle requirements. The De Dion sparking plug is already well known to the American trade as the standard sparking plug of the world. A novelty that they are just introducing is an hydrometer made according to their specifications, which is graduated especially for automobile requirements.

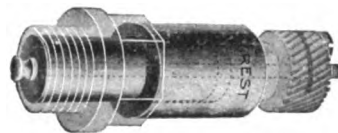
#### SPARKING PLUGS.

THE Crest Manufacturing Co., Cambridgeport, Mass., have been putting sparking plugs on the market for one year. The demand both in this country and abroad has reached to an extent that justifies them in manufacturing these plugs by special machinery. Not only has the quality of the product been improved thereby, but it has also cheapened the cost of manufacture, and they have decided to give their customers the benefit of this reduction in cost in the quotations of their plugs, which is the same the world over. They find that the demand has been greatest in regard to the style of plug, which is universally used in Europe. For this reason they have got out what they call a Crest Special Indestructible Sparking Plug, having either



CREST SPARKING PLUG.

the French metric thread or a standard 16 thread to adapt it to American taps. This plug, as will be seen by the illustrations, consists of a shell of steel having a thread at one end to screw into the orifice of the chamber of the motor. Through this shell is a tapered hole in which the insulating cone is inserted, making a perfect gas tight joint. Above the shell and fitting around the upper part of the cone is a cup of insulating material. A nut on the metallic stem, which passes through the cone, holds the several parts of the sparking plug together. A nut on the metallic stem screws on to a metallic washer, which takes care of the difference of expansion between the insulating material and the metallic stem. On this shell is a binding nut which is partially split, as shown in the cut, having a small extra binding screw, which has a special locking device, to prevent the nut loosening. This is an important improvement, as it is well known



CREST SPARKING PLUG, SECTIONAL VIEW.

that vibration will loosen the ordinary lock nut. This sparking plug, on account of its peculiarity of construction and the material used, is unaffected by expansion and the intense heat of the motor, practically eliminating all troubles that have hitherto been incidental to sparking plugs. The Crest Manufacturing Co. are receiving a great many duplicate orders not only from users but manufacturers of motors, which is a good indication of the success of their plug. One of the best evidences shown in favor of the sparking plug is that most of the racing machines in this country are using the Crest Sparking Plug. This service is extremely hard on the plug, as the motor works at full speed at all times, as the plug does not have the rest the same as when used on an automobile. They have tried every material known as an insulator, and have found that the material they are now using is best adapted for this class of service.



CONDUCTING A ONE HUNDRED MILE TEST.

ALTHOUGH the weather was far from favorable, the 100 mile endurance test of the Long Island Automobile Club was so well planned and succeeded so well as to give the hope that there will be many of these runs conducted by other clubs in the future. We give an account of the way the problem was solved entirely separate from the run or its results, which we believe will be interesting.

Long Island offers superior facilities for such a run, but even on Long Island it was necessary to lay out a course over roads not only superior for running purposes, but easy to follow, and at the same time offering easy access to railroad stations, and short cuts for the return of any who dropped out to the starting point. The Long Island Railroad covers the island closely with stations well distributed, which also simplified the problem.

Road maps were traced and blue prints furnished to every vehicle entered. There were also large detail maps, showing short return routes to the finish. Mr. Adams had charge of the marking of the course with special signs, and the work was excellently done. The entire course was run over and checked by odometers by the committee in charge and some of the important mileage points marked.

The timekeepers' blanks were as follows:

Timekeeper's record of vehicle No. ....

TIME RECORD AT CONTROL.

|        |     |      |        |      |      |
|--------|-----|------|--------|------|------|
| No. 1. | HR. | MIN. | No. 9. | HR.  | MIN. |
| " 2.   | HR. | MIN. | " 10.  | HR.  | MIN. |
| " 3.   | HR. | MIN. | " 11.  | HR.  | MIN. |
| " 4.   | HR. | MIN. | " 12.  | HR.  | MIN. |
| " 5.   | HR. | MIN. | " 13.  | HR.  | MIN. |
| " 6.   | HR. | MIN. | " 14.  | HR.  | MIN. |
| " 7.   | HR. | MIN. | " 15.  | HR.  | MIN. |
| " 8.   | HR. | MIN. |        |      |      |
| FINISH |     |      | HR.    | MIN. |      |

NOTE.—Controls are numbered consecutively from 1 to 15 and are also distinguished by blue banners.

Time must be noted at each control.

RECORD OF ALL STOPS.

|             |     |      |        |     |      |
|-------------|-----|------|--------|-----|------|
| ONE.        | HR. | MIN. | START. | HR. | MIN. |
| CAUSE ..... |     |      |        |     |      |
| TWO.        | HR. | MIN. | START. | HR. | MIN. |
| CAUSE ..... |     |      |        |     |      |
| THREE.      | HR. | MIN. | START. | HR. | MIN. |
| CAUSE ..... |     |      |        |     |      |
| FOUR.       | HR. | MIN. | START. | HR. | MIN. |
| CAUSE ..... |     |      |        |     |      |
| FIVE.       | HR. | MIN. | START. | HR. | MIN. |
| CAUSE ..... |     |      |        |     |      |
| SIX.        | HR. | MIN. | START. | HR. | MIN. |
| CAUSE ..... |     |      |        |     |      |
| SEVEN.      | HR. | MIN. | START. | HR. | MIN. |
| CAUSE ..... |     |      |        |     |      |
| EIGHT.      | HR. | MIN. | START. | HR. | MIN. |
| CAUSE ..... |     |      |        |     |      |
| NINE.       | HR. | MIN. | START. | HR. | MIN. |
| CAUSE ..... |     |      |        |     |      |
| TEN.        | HR. | MIN. | START. | HR. | MIN. |
| CAUSE ..... |     |      |        |     |      |
| ELEVEN.     | HR. | MIN. | START. | HR. | MIN. |
| CAUSE ..... |     |      |        |     |      |
| TWELVE.     | HR. | MIN. | START. | HR. | MIN. |
| CAUSE ..... |     |      |        |     |      |

NOTE.—Right turn indicated by a sign and red banner. Left turn indicated by a sign and white banner.

Notice to operators of motor vehicles participating in the 100 Mile endurance test of the Long Island Automobile Club.

1. Vehicles must be ready to start promptly at 9 o'clock A. M.
2. Vehicles will be classified as to motive power, and started at 30-second intervals.
3. Vehicles overtaking each other must pass to the left.
4. Vehicles being overtaken must yield at least one-half of the roadway to the overtaking vehicle.
5. Vehicles must keep to the right of the center of the roadway at

all times, except when the condition of the same (there being no approaching vehicle) compels them to cross to the left side of the center.

6. Vehicles traveling on the left of the center of the roadway must cross to the right side, irrespective of the condition of the same, when
  - a. Signalled by an overtaking vehicle, or
  - b. When approaching a vehicle.

7. Vehicles should give due warning by signal when within 100 feet of another, whether approaching or overtaking.

8. Vehicles overtaking another, and approaching any conveyance (before having passed the overtaken vehicle), must drop back to the rear of the overtaken vehicle, until such conveyance shall have safely passed.

9. In case of collision or foul, the operators of all vehicles involved must report in writing to the committee, giving all details of such collision or foul, within twenty-four hours of the completion of the contest.

10. Any and all complaints must be made to the committee in the name of the owner, within twenty-four hours of the completion of the contest.

On the back were the instructions and rules for operators.

The hill climbing contest, which was on a grade forming part of the run, was marked by a tape at start and finish, and a special card made out by time-keepers, stationed at each tape, was required as follows:

Hill climbing record of vehicle No. ....

|             |              |
|-------------|--------------|
| Start ..... |              |
| Stop .....  |              |
|             | Signed ..... |
|             | Signed ..... |

The final awards were made up on the following cards, being a complete record of the run, including the hill test:

JUDGES AND TIMEKEEPERS' RECORD.

Vehicle No. ....

|                              |                                  |
|------------------------------|----------------------------------|
| Maker .....                  |                                  |
| Horse Power.....             | Passengers.....                  |
| Power.....                   | Weight .....                     |
| Operator .....               |                                  |
| Observer .....               |                                  |
| Time of Start.....           | Hr.....Min.                      |
| Time of Completion.....      | Hr.....Min.                      |
| No. of Stops.....            | Time Penalty.....                |
| Fuel Consumed.....           |                                  |
| Hill: Start.....             | Hr.....Min. Stop.....Hr.....Min. |
| Award .....                  | Ribbon.....Cup                   |
| Per Cent. of Efficiency..... |                                  |

The novel feature of the entire programme was a lantern exhibition of all the turns and land-marks on the course, given the evening before by Mr. H. B. Fullerton. Mr. Fullerton's descriptions were particularly clear and the slides were excellent. After the close of the exhibition, Mr. Fullerton asked for questions, and although he had a most appreciative audience, composed of those who intended to take part in the next day's run, many of whom had not been over the course, there were none who cared to ask any, as each point had been so completely covered. Refreshments were served informally by the club. This feature always promoted good fellowship, which is the keynote of every successful club. The evening was made a very pleasant one.

The roads were in perfect condition, being of fine hard macadam. There was absolutely no mud, even in the downpour of rain, which lasted all day. Wet it was, and little rivers of sand and water flowed off the rounded surface of the roads, or were caught up by the wheels and thrown into the air. The wheels, however, made practically no impression, and the tires had a firm grip at all times.

METAL GEARS, ALSO.

THE New Process Raw Hide Co., Syracuse, N. Y., has recently added considerably to its equipment by the purchase of new machinery, including three Gleason bevel gear planers, which plane the teeth accurately to cone lines, and an additional automatic spur gear cutter, and is now in the market to make metal gears to order in addition to its well known new process pinions.

LET the wittiest thing be said in society, there is sure to be some fool present who, for the life of him, cannot see it.



## The Chauffeur's Tip.

UNDER this heading the "Chauffeur" will attempt to give from month to month information of interest to dealers and clubs, and also to owners of automobiles.

### AUTOMOBILE CAPS FOR SUMMER WEAR.

THE warm days reminded me that the heavy cap, which has done me such good service through the storms of winter and the winds of spring, is too heavy for further service. I suffered patiently several days, but at last I went up to 248 West Twenty-third street to see Demmerle & Co. and tell my troubles to Mr. Mendelsohn, and see if he could help me out. What was my surprise after I had told him the trouble and sketched out what I wanted, to have him call for a box of caps and take out, not the very cap I had described, but one so far beyond my fondest dreams of perfection that I could only say, "perfect."

The cap he showed me is made of black silk; "autosilk" he calls it. It is absolutely waterproof, being treated by a special process; as light and cool as a soft straw hat, and yet as durable and weather proof as my kid one, with the same natty stylish shape, and stiffened just enough in front to cause it to retain its shape.

Mr. Mendelsohn says he has spent over \$300 in perfecting the cap and the material. It is certainly worth what he charges for it, and the moment you see it you will be convinced of this fact.

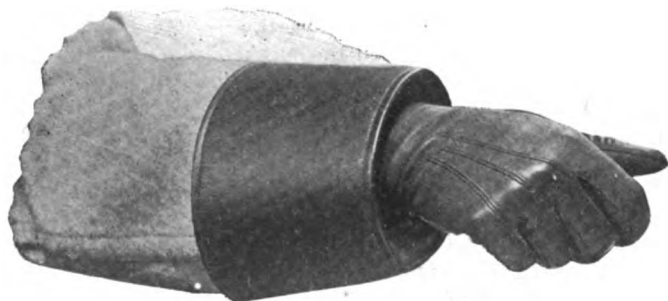
### AUTOMOBILE AND DRIVING GAUNTLET.

A NEW idea in gauntlet, which is just being put upon the market by Demmerle & Co., of New York, is illustrated herewith. This



GAUNTLET.

gauntlet will prove a great comfort to both drivers of horses and to chauffeurs. Fitting as it does closely around the wrist it excludes dust and rain, and also prevents drafts up the sleeve, keeping the hands warm. It also protects the coat sleeve and at the same time has a neat and stylish appearance.



GAUNTLET AND GLOVED HAND.

This novelty adds one more to an already creditable line of new things Demmerle & Co. have brought out, and will be appreciated by the thousands who enjoy driving.

### THE DE DION QUADRICYCLE'S RECORD.

A REMARKABLE record for economy of operation was that made by Cormier, of France, last month, on a De Dion quadricycle, over the Paris-Roubaix course, a distance of 168 miles. This quad was a standard De Dion, such as the De Dion-Bouton "Motorette" Co. is now supplying, fitted with a  $2\frac{3}{4}$  H. P. motor and free clutch. The motor has a water jacketed head. Cormier and passenger covered the 168 miles on the remarkably low gasoline consumption of 3 1-6 gallons, at a total cost of 39c. for the trip.

### NOT TRUE.

THE Century Motor Vehicle Co., of Syracuse, N. Y., write us that there has been a report circulated that their plant was either partially or totally destroyed by fire. They cannot imagine where this originated, unless the name of their firm may have been used for that of another. This has to a certain extent given the public the impression that they are unable to fill orders, which they wish to contradict. Also some similar report may be circulated in the course of the next day or two in connection with the prevailing labor troubles of the machinists. Some of their machinists who were dissatisfied made a demand on them which they could not concede. Enough men remained at work, however, to warrant their getting out any orders that come their way in addition to filling what orders they already have in hand.

### AUTOMOBILE STORAGE AND REPAIR STATION.

AUTOMOBILISTS in Buffalo, N. Y., can find every facility and accommodation for their vehicles at the Automobile Storage, Inspection and Repair Station, No. 303 North street, near the Circle, within three minutes' walk of the club rooms of the Buffalo Automobile Club, where their machines can be cared for, stored, cleaned, inspected, repaired, recharged, etc.

### HE WOULDN'T "MOTE."

MR. HENRY EDMUNDS, a member of the committee of the Automobile Club, contributes to the club leaflet the following verse, which was inspired by a successful trip to Scotland, which he made on his 6 horse-power Daimler car:

You may ride on a horse, or a mule, or a moke,  
You may drive in a carriage or sail in a boat,  
You may swim in the water, or fly in the air,  
Go just as you like, but only take care.  
You may skate, you may walk, take train, tram or 'bus,  
Go in great state, or without any fuss,  
You may "bike" on a wheel, a single or tandem,  
Go just as you please, at will or at random,  
You may stay at home near, or travel afar,  
But nothing can equal a "mote" on a car.

—The Road.

### NOW READY FOR ORDERS.

THE Fischer Motor Vehicle Co., 1311-1313 Hudson street, Hoboken, N. J., manufacturers of the Fischer combination gasoline-electric auto-truck, which has given such excellent results in heavy service, are now ready to fill orders. They have refrained from making sales until the vehicle had been perfected to the point where it could be operated successfully under any conditions, and now that this has been accomplished they are soliciting orders for the auto-truck, and we understand are quite busy at the factory.

### ANOTHER GASOLINE MOTOR.

THE Dirigo Engine and Machine Works, Portland, Me., manufacture gasoline motors which can be used for various purposes, such as automobiles and factories. A simple, safe and reliable motor that can be operated by any man of intelligence. See advertisement in this month's HUB.

### NEW JERSEY CHARTER.

A CHARTER has been taken out in Trenton, N. J., for a new Woods Vehicle Company to manufacture automobiles. Its capital is \$1,500,000.

### LOOMIS CARBURETTORS.

THE Patee Bicycle Co. of Indianapolis, Ind., have tested one of the Loomis carburetors made by the Loomis Automobile Co., Westfield, Mass., to the extent of five thousand miles, on their motor cycles, and were so much pleased with the device that they have placed an order for five hundred. It is noticed that the Patee company are sparing no expense in the manufacture of their motor cycles, for the Loomis is the most expensive carburetor on the market. The Patee company are rushed with orders.



A GENERAL SURVEY OF FOREIGN TRADE.\*

DURING the calendar year just ended, the inundation of foreign markets by American goods proceeded on the lines indicated in previous issues of the Review of the World's Commerce, with a constantly growing volume and force which have surmounted many difficult obstacles and offer a strong temptation to overconfidence in our capabilities as an exporting nation. At the present time, the United States may be said to be nearing the top wave of industrial eminence, and there is ample reason for the belief that the next few years will witness a great expansion in the sale of our more highly developed manufactures. But in the annual reports of our consular officers for the year 1900, there runs, along with a common note of satisfaction, a warning, here and there, of a more strenuous competition which, in the end, may counterbalance our superior advantages to a considerable extent and check our progress in the world's markets, unless we equip ourselves in the meantime for the ultimate phases of the struggle.

Nothing could well be more gratifying than the picture of our foreign trade as it is to-day by comparison with the figures of very recent years. It is all the more remarkable because our progress has been achieved with but little effort and by means not directed specifically to the promotion of foreign trade, but largely fortuitous, and springing from our intense absorption, for many years, in domestic industry and internal development. In other words, we have reached a surprising eminence in the exportation of manufactured goods, not because we were seeking that goal, but because, in developing our resources, in manufacturing for the home market, we attained an excellence and comparative cheapness of production which, to the astonishment of ourselves as well as of the world at large, has suddenly made us a formidable competitor—perhaps the most formidable of all—in the great international rivalry for trade.

The question for the future is whether we can permanently hold the position we seem about to gain, by means of what may be termed our purely domestic advantages of economy of production, greater labor efficiency, and cheap raw materials, or whether we shall not have to fight hard against nations now falling behind us, with weapons specially fashioned for controlling foreign trade—as, for example, more scientific export methods, better facilities for banking and transportation, more liberal credits, and manufacturing for particular markets with intelligent regard to climatic and race requirements. Many of our consuls still tell us that our commercial activity abroad is almost primitive in the details of trade competition, although of late our exporters have begun to send capable representatives to the more important trade centers; and the past few years have witnessed the creation of important trade organizations in the United States for the study of foreign commerce, the adoption of special courses of commerce at a number of our colleges, and the establishment of sample rooms and agencies for the sale of American goods at a few of the entrepôts of countries which offer a favorable field. Meanwhile, foreign manufacturers are introducing our labor-saving machinery or imitating it, and European economists are urging industrial reforms or legislative enactments to meet our threatening competition.

It is the relative cheapness of American steel that has given it pre-eminence, and it is the same with other products that are winning their way abroad. Economy of production is the master key that unlocks for us markets that seemed a little while ago to be inexorably closed. This economy of production implies not merely low prices to the foreign consumer, but a greater degree of excellence, a superior adaptation to his wants. As has been pointed out in the reviews, as well as elsewhere, the American workman, though receiving higher wages, produces, with labor-saving machinery, at a lower unit of cost, and his greater application and ingenuity enable him to avail himself effectively of the most recent inventions and appliances for improving the quality of his special line of work. The American factory system is highly organized and more efficient than any other, and, if our export trade were as well developed, there would be little to fear. The only lesson our manufacturers need to learn, it would seem, is the necessity of manufacturing especially for foreign trade; and the great increase of requests for information from our consuls as to the kinds of goods wanted in particular markets, and also of manufacturing processes

employed in this or that line of industry, encourages the hope that there is beginning to be a general perception of this important fact.

RECIPROCAL TRADE AGREEMENTS.\*

Among the measures which have already forced themselves upon our attention as necessary aids to our expanding commerce are reciprocal trade agreements and better facilities of transportation and banking. Substantial progress has been made in securing the first of these. According to a paper in the *Forum* for December, 1900, by Mr. John Ball Osborne, joint secretary of the United States Reciprocity Commission, of which the Hon. John A. Kasson is the head, the following agreements not requiring ratification by the Senate have been concluded and are in force:

Section 4 of the United States tariff law authorizes the President to negotiate treaties of reciprocity within specified limits. Under this provision, the following conventions have been concluded, the treaty term being five years, except in two instances, where it is four years:

II. With the British West Indies. The following conventions with the British West Indies were negotiated in most instances by colonial delegates, who came to Washington for that purpose, but were signed by the diplomatic representative of the British Government:

Barbados.—Signed at Washington on June 16, 1899. The United States grants a concession of 12½ per cent. reduction of the existing duties on cane sugars and molasses, fresh fruit and vegetables, and asphalt or manjack. In return, Barbados agrees to the free admission of nineteen articles of United States exports, including vehicles, clocks, cycles and parts, machinery for electric lighting, corn and corn meal, cotton-seed oil, eggs, hay, horses, pitch, tar, resin, etc.; it also guarantees that the duties imposed on eight classes of goods, comprising fruits and vegetables, clothing, hardware, furniture, earthenware, glassware, wooden ware, and willow ware, shall not exceed 5 per cent. ad valorem, and it specifies low rates, which shall not be increased, on twelve classes of United States merchandise.

British Guiana.—Signed July 18, 1899. The United States grants a reduction of 12½ per cent. on cane sugars, fresh vegetables, and kaolin. The reciprocal concessions given by the colony are almost identical with those granted to the United States by Barbados, the articles being practically the same, with slight differences in the specified low rates in the third schedule.

Turks and Caicos Islands.—Concluded July 21, 1899. The United States concedes a reduction of 12½ per cent. merely on salt and unmanufactured sponges, and continues the free admission of unmanufactured and undressed sisal grass. Reciprocally, the islands grant exemption of customs duties on twenty-one products of the United States, including cereals and other farm products, manufactured goods of various kinds, iron, steel, copper, etc.; and on another list of nineteen articles low rates are specified, which shall not be increased.

Jamaica.—Signed July 22, 1899. The United States concedes a reduction of 12½ per cent. of the duties on cane sugar and molasses; of 20 per cent. on citrus fruits, pine apples, fresh vegetables, and rum; and the free entry of certain natural products of Jamaica not produced in this country. In compensation, Jamaica agrees to admit free of duty fifty-nine classes of products of United States soil and industry, including machinery, agricultural implements, and tools; telegraphic, telephonic, gas, and electrical apparatus and appliances; railway equipment, vehicles, steam engines; sewing machines, steel, zinc, coal, coke, fruit, fish, meat, etc. The colony also agrees upon certain low rates, which shall not be exceeded, on a further list of twenty articles of United States export, comprising farm products, lumber, cotton-seed oil, cotton cloths, petroleum, and wines.

Bermuda.—Concluded July 24, 1899. The United States grants a reduction of 20 per cent. of the present duties on the island's early potatoes, its onions, tomatoes, and other fresh vegetables, as well as its bulbs and natural flowers. In return, we secure the free admission into the colony of thirty articles of merchandise, including fresh and canned fruits, vegetables, fresh and canned meats, dredging machinery, agricultural implements, clocks, vehicles, cycles, cotton-seed oil and cake, naval stores, etc. Bermuda also agrees that on seven enumerated classes of articles, including cereals, flour, and furniture, the rate of duty shall not exceed 5 per cent. ad valorem, and specifies a low rate for United States cattle.

\* Extract from the Review of the World's Commerce, introductory to Commercial Relations of the United States, 1900 (in press). The Review is also printed as a separate pamphlet. Applications for it, as also for the two bound volumes Commercial Relations, should be addressed to the Chief of the Bureau of Foreign Commerce, Department of State, Washington, U. S. A.

\* In compiling this report we have omitted mention of all countries except the Pan-American.



Trinidad.—Concluded July 22, 1899, but failed to receive the assent of the colonial legislature. A second convention was then negotiated and signed on February 13, 1900, by United States Commissioner Kasson and Lord Pauncefort, the British Ambassador. The stipulated period for exchange of ratifications has expired and, not having been extended, it has not been sent to the Senate.

III. With the Argentine Republic; signed at Buenos Ayres, July 10, 1899. The United States concedes to Argentina a reduction of 20 per cent. of the existing duties on sugar, hides of cattle, and certain kinds of wool. Reciprocally, Argentina grants the following concessions upon the products of the United States: (1) A reduction of 50 per cent. of the duties (existing or which may be prescribed by law) on ten classes of articles, principally canned goods; (2) a reduction of 20 per cent. of present or future rates on eight classes of articles, including bacon, all cereal foods, sail twine, and cotton rope; (3) a guaranty that the duties imposed on furniture made of oak, ash, or pine shall be calculated on a basis more favorable than at present; (4) a reduced rate of 15 per cent. ad valorem on white, spruce, Oregon, and yellow pines, oak and ash lumber, undressed; (5) a guaranty of a fixed low rate on cotton-seed oil; and (6) the specification of reduced aforos on about thirteen articles largely imported from the United States. The aforos are valuations on imports which are fixed by the executive authority of Argentina as the basis for the assessment of ad valorem duties.

IV. With Nicaragua; concluded October 20, 1899.

V. With Denmark on behalf of the West Indian Island of St. Croix; concluded June 5, 1900.

VI. With the Dominican Republic; signed at Washington, June 25, 1900.

VII. With Ecuador; signed July 10, 1900.

The last four conventions have been submitted to the Senate, but have not been made public. The treaties with France, the British West Indies, and the Argentine Republic are still (January 23, 1901) pending in the Senate.

In America, we still control more than half of Canada's trade, though trade with Great Britain is growing because of the preferential tariff of 33 1-3 per cent. in favor of English goods. With Mexico, our trade relations continue to be most satisfactory. During the fiscal year 1899-1900, we took 77 per cent. of Mexico's exports and sold her over half of her imports. Capital from the United States is flowing into the country, and the recent industrial growth has been remarkable. Our goods seem to be making steady progress in Central America—especially in British Honduras, Costa Rica, the Republic of Honduras, and Nicaragua. We have lost ground somewhat in Guatemala, though we sent nearly one-half of her purchases in 1899. Great Britain, upon the other hand, increased her sales by about \$134,000. Salvador imports only something over two-thirds as much from the United States as from Great Britain, although we take twice as much of her products. A notable fact about Central America is the increasing investment of German capital in commercial enterprises, especially in Costa Rica, Guatemala, and Nicaragua—which is estimated to amount to some \$67,000,000—and the encouragement given to Germans to emigrate to Central American countries.

With the West Indies, especially the British islands, our trade is constantly growing. In Jamaica, we have 64 per cent. of the imports, against a little over 33 per cent. from Great Britain. Generally speaking, the West Indies may be said to draw the bulk of imported food supplies from us and an increasing proportion of manufactured goods as well. To Haiti, we furnish 66 per cent. of the imports, though nine-tenths of the exports are sent to Europe. Our consul at Copenhagen, Mr. Freeman, reports under date of December 20, 1900, that "seven new steamers have just been ordered for the fruit trade between the West India Islands and the United States." "The contract for one of them—the *Taunton*—with the option of two others," he adds, "was signed to-day between the United States Fruit Company and Messrs. Burneister & Hains, extensive ship-builders of Copenhagen. Three of the seven will be built in England, three in Norway, and one in Denmark, with a possibility of two more at Copenhagen. The United States Fruit Company has already over twenty steamers in the banana trade from the West Indies to American ports. These vessels are registered as Norwegian, but it is understood that the bulk of the capital invested is American."

In Cuba and Porto Rico, sufficient time has not yet elapsed for recuperation from the war and the readjustment of industrial and commercial conditions, but in both islands, trade is beginning to revive, with the promise of gradual development on lines of closer intimacy with the United States.

In South America, as has been shown, our trade has developed but slowly, except in the Argentine Republic and Peru. In 1899, the imports of Argentina from the United States increased by over \$4,000,000. We now stand second in imports, though we still have but little over one-third of Great Britain's share. We exceed Germany by about \$2,500,000 and Italy by \$1,800,000. The imports from France are comparatively insignificant. As heretofore stated our commerce with Peru increased from \$1,588,000 in 1897 to \$3,491,000 in 1899. During the first eleven months of 1900, our exports thither amounted to \$1,981,642, against \$616,559 for the whole of the calendar year 1899. With Bolivia, our trade is still trifling, the import business being largely in the hands of Germans, owing partly to the cheapness of their goods and partly to German immigration. Brazil sent us \$60,000,000 worth of her products in 1899 and took less than \$12,000,000. Great Britain, importing but \$20,000,000, sold Brazil \$27,000,000 worth of goods. Germany sold Brazil about half of what she bought; France, a little less than four-fifths. Belgium, importing a little over \$2,000,000, sold more than \$10,000,000. The United States ranks only sixth among the nations selling to Brazil, though it buys more of Brazil's staples than all Europe combined. Brazil has been passing recently through a period of commercial depression, but Consul Furniss of Bahia reports a better outlook for the new year. Consul Gunsaulus attributes the slow progress of American trade with Brazil in great part to the need of better transportation facilities and to the fact that all railroad and banking institutions, as well as many other large enterprises, are controlled by European capital. In Chile, Great Britain still has the largest share of the imports (about \$16,000,000 in a total of \$39,000,000) and takes more than two-thirds of the exports. Germany comes next in sales to Chile, and the United States third, with \$3,000,000, or but little more than three-fourths of Germany's share. In Colombia and Venezuela, trade has suffered recently from political disturbances; in Ecuador, we had about 22 per cent. of the exports of the first six months of 1900. In the Guianas, we take nearly as much as England from the British colony, but sell only half as much; and we export but little more than one-fourth of the Dutch colony's purchases, though we buy more than half of its total exports. Holland, upon the other hand, takes only one-third of the exports and has more than half of the import trade. In French Guiana, the imports are almost wholly from the mother country. With Paraguay, our trade is still insignificant; but in Uruguay, Consul Swalm notes a steady expansion of United States trade and increasing popularity of American goods.

#### A QUEER CROP.

THE white-wax crop exported from China is made by the curious method of using minute insects in its production. These insects are found in brown pea-shaped excrescences or galls attached to an evergreen tree called the "insect tree." The galls are gathered in May and carried in headlong flight to the market towns by bearers, who travel at night, so that the heat may not force the insects to emerge during the journey. They are then placed in a "wax tree," which is a stump varying from three to twelve feet in height, with numerous branches rising from the top, similar to the pollard willow. The wax insects are made into small packets of twenty or thirty galls, which are inclosed in a leaf of the wood-oil tree, fastened together with rice straw. These packets are suspended close to the branches, under which they hang. On emerging from the galls the insects creep rapidly up the branches, to which they attach themselves, and begin forming a coating of wax that in about three months attains a thickness of almost a quarter of an inch. The branches are then cut off, and after removing as much of the wax as possible by hand, they are put in a kettle of hot water, when the remaining wax floats on the surface, and the insects finish their term of usefulness by going to the bottom.

#### DOMINICAN EXPORT DUTIES ABOLISHED.

THE Department has received from Consul-General Maxwell, of Santo Domingo, under date of April 17, 1901, copy of a message of the President to Congress regarding the suppression of export duties, \$1,756,266.19; export duties, \$635,785.55. Deducting May 1, 1901, has been enacted abolishing the duty on all articles of export. The annual revenues from export duties, adds Mr. Maxwell, amounted to about one-fourth of the total income of the republic. The statistics for 1900 furnished by the Minister of the Treasury and Commerce give the following favorable figures: Import duties, \$1,756,266.19; export duties, \$655,785.55. Deducting



from the export duties \$130,491.85 for the differential duties, there remains \$505,293.70. Taking the revenue for the first three months of 1901 (\$697,654.05) as a basis, the revenue for the year may be estimated at \$2,285,322.50, from which, deducting the export duty of \$505,293.70, there remains \$2,285,322.50, with which sum the government can meet its estimated expenses and most pressing obligations.

#### A NEW WAGON FOR SOUTH AFRICA.

THE Cortland Wagon Co., Henrietta street, Covent Garden, London, have prepared, to the order of a gentleman who has had considerable experience of traveling in South Africa, a wagon for traveling purposes, to be used with eight mules. This carriage is very different from the ordinary style of Cape wagon, and is an advance upon the ordinary Cape cart, whilst retaining some of the advantages of each of these vehicles. The carriage is one of the ordinary shooting wagons of the company, enlarged and modified to suit the requirements of the owner. The body is flat and shallow, about eight feet long, and the seats are on one level and much wider than ordinary, placed in order that the back rest of the front seat falls on to the edge of the hind seat, and the back rest of the hind seat lifts out and fits on to stays on the dash provided for it, and on the edge of the front seat. The squabs being stuffed to the same thickness as the cushions, the seats and backs form a comfortable bed for two passengers, and the extension top and side curtains sufficiently enclose the whole. The hind portion of the wagon is enclosed at the level of the seats, and the interior provided with shelves, etc., for the larder, the inside of the door and the top of the "boot" being lined with zinc. Lockers are provided under the seats, and on the back rest of the front seat a gun rack is fixed. The dash, covered with brown patent leather, is provided with stout stays and carries a folding tray in front, suspended by chains of sufficient strength to carry heavy weights; hooks are provided underneath for cooking utensils, etc. The body is substantially built of American ash, and is strengthened by special steel corner plates and side mouldings; the seats and raisers are all of ash. The under carriage is of the ordinary American platform type, with springs to the fore and hind carriages. Colling axles are fitted to the Warner pattern wheels, which are of light type, shod with stout and hard steel tires with double bead edges. A powerful brake to the wheels is also fitted. The mode of attachment of the pole and leading bars is designed to obtain the greatest amount of freedom of movement and ease of draught. The pole is provided with whippetrees and even bar and yoke in the American style for the wheelers. The second and third pair of leading mules are attached to traces to the leading bars, and these are attached to a trek chain passing through rings under the pole, which is attached to special lugs welded on the centre of the front axle, and, passing underneath, is attached to two chains secured to the spring flaps of the hind axle. The leading pair of mules is attached to the traces of the second pair. Check chains are also secured to the brake-rod and axles.

The carriage is finished in clean varnished wood and trimmed in pigskin, the canopy and curtains being in water-proofed canvas, the whole being a very serviceable and workmanlike vehicle.—*Carriage Builders' Gazette*.

#### ALLEGED GOLD DISCOVERIES IN SAMOA.

THERE have been so many letters of enquiry sent to this office concerning the discovery of gold and other precious metals in these islands, that I feel it my duty to report upon the subject. United States papers have published statements in regard to the gold-bearing sands of Samoa, and it appears that many people have paid for expenses of development, etc.

I have from time to time made investigations, and if there are minerals—either gold, silver, mica, nickel, zinc, tin, or any other—in these islands, I have been unable to find them or to find any person who has any knowledge of the fact. If there is any "Gold Mining Company of Apia" (as reported in United States papers), the records do not disclose the fact, and the officials have no information upon the subject. No steamers, schooners, or other vessels are engaged in transporting sands or ores to Sydney or to San Francisco or elsewhere; no such persons as those named as constituting the "Gold Mining Company" are known here, and, in my judgment, a tremendous swindle is being perpetrated, and the public ought to know the facts.

L. W. OSBORN, Consul-General.

Apia. March 23, 1901.

#### ITINERARY NOTES.

STARTING from Ironton, Mo., southward: At Ironton two important concerns are developing, manufacturing hubs and other wagon stock. Of these, the Clark Manufacturing Co. has the largest capacity. Hub stock is plentiful in the Missouri forests and can be laid in the yards of the factories at little expense. The Piedmont Hub Manufacturing Co., Piedmont, Mo., has been in operation about three years, working steadily with medium annual capacity. The Paragould Hub Manufacturing Co., Paragould, Ark., has put into operation a small plant, chiefly seeking the hardware trade as distributors. Although the center of hub manufacture and distribution is still in the East and Middle West, the forest wealth of Arkansas is inviting investors. The industry is in its infancy and thus far chiefly cognate with cooperage stock and sawmill production. Exclusive manufacturers of wagon and carriage stock in this district claim that, after freight rates are added, the profit gain is insignificant in competition with the factors contiguous to the Eastern markets. While Jonesboro, Ark., is producing some wagon stock, the notable industry there is the Jonesboro Wagon Manufacturing Co., producing farm and log wagons.

The center of manufacture in this territory lies at Memphis, Tenn. Here the industry has been flourishing for years, bringing forth such substantial houses as the Graham-James and Bruce factories, with a half dozen of lesser magnitude but spheric Southern importance. Conjunctively with the growth of the carriage industry at Memphis may well be noted the importance as a harness market this city has attained to. With the Hart Manufacturing Co. as the nucleus, this industry has reached a volume second only to St. Louis. Particularly large is the demand for saddles, owing to the vast unroaded area embraced by the inforest districts.

Ft. Smith, Ark., holds the key to a lively traffic into Indian Territory, though the territorial home trade is fast getting control of its own resources. Said Thomas Hale, of Durant: "Our dealers are not equal to every feature of the market as yet, but the vehicle and implement trade will soon be within the possibilities of our own enterprise to at least half its volume. With the communication facilities now building and contemplated, this country will offer bright opportunities in the vehicle and implement branches, industrially as well as commercially."

J. A. Smith, Kingfisher, O. T., says: "Though our territory is closely allied to the interests of Kansas and draws largely upon the supply sources of that State, the implement and vehicle trade within our own boundaries is certainly representative under present conditions. Our agricultural wealth and the opening of the Cherokee strip will soon fetch us up to the top notchers hereabouts."

While crop shortages are bulletined from Texas, Arkansas and Oklahoma, the aspect of the Kansas wheat fields would belie any similar report from this region, thereby forecasting another golden year for this State. In conversation with J. W. Panten, of Fredonia, Kan., C. H. Smyth, Wichita, Kan., Ed. Heeney, Severance, Kan., and others, I learn that all's well from the dealer's viewpoint, the prospective volume of agricultural implements being fully up to conditions, with the financial tone rather better than since wheat prices began to rehabilitate themselves. As to wagons, carriages and other vehicles plus associate lines, the demand calls for a better assortment, quality and prompt delivery. Liberality characterizes transactions and confidence is not lacking on either side. Carloads of new buggies will go into Kansas this year, and the dealer best prepared to meet the demand will attract the buyer. The transition of the mortgage-ridden farmer to a freeholder and affluence is cropping out in the commercial indices of every trading point.

A run into Kansas City fetched me up with the briskest spring business for years, from the platforms of the McCormick and Deering depots to the shopping rooms of the vehicle and hardware dealer. J. E. Baird, as spokesman for the local trade, remarks as follows: "Ever since there has been any semblance of good weather, our buggy and carriage salesrooms have been filled with lookers and buyers, balancing up a satisfactory amount of sales for March and April. May will probably be the banner month. Quality goes before all else, especially in fashionable pleasure vehicles. Automobiles are somewhat growing in use, the surface conditions of our streets being the chief hindrance to their commercial popularity; however, we have good country roads and that means a great deal to the autovehicular and cycle trade. The volume of the implement business is limited to the supply only, most dealers alleging factory delays and car shortages, thus diverting trade to other distributing centers in some instances. What the wagon trade will develop is as yet problematical, but from the Studebaker



branch it is learned that there is less holding off than last year, when business was about one-fourth less than expected." I had occasion to visit the new factory of the reorganized Zartman-Thalman Carriage Co., working to full capacity on a string of orders and replenishing stock in the reputed high class line of buggies and carriages; the visitor may also be interested in the Day autos, "built to beat the hills."

Joplin, Mo., though materially a mining center, has attracted a fair share of the implement and vehicle business of the section, reaching out into the Ozark Mountains and plains. Apples and peaches are the leading agricultural products of the region, crop prospects being fine. The farming section radiating from Jefferson City, Mo., looks prosperous, dealers, manufacturers and wheelwrights being rushed in every line.

Conditions throughout agricultural Illinois would denote a busy year for every branch of the trade. H. H. Orendorff, of Canton, in speaking for the retail implement dealers, portrays the situation as one needing no elucidation as to activity, but business can't be considered actually satisfactory until the factories have become equal to the demand. In speaking for the carriage builder, D. M. Sechler, of Moline, points out the geographical advantages of the State as well as the prestige and repute of Indiana and other neighbors. Placing Illinois in the front rank of specialty manufacturing would give it a national scope, but recurring to the doings within the State outside of Chicago, which has a world of its own, the volume and the character of the demand would assume a year of profit and welfare.

The conviction seems to grow among the dealers in all branches that trade ills are best remedied and modified by the interrelative benefits of association, and practical literature upon this question should be the order of the day.

The June meeting of the N. A. at Detroit will probably be the greatest concourse of tradesmen ever held within a city's lines. The attraction in most cases is the Buffalo Exposition, and incidentally a vacation round of visits about the Great Lakes. Everyone says he's going, so look for a monster trade reunion. I need not point out what this convention may mean, advertisingly, to Detroit, whose spick and span boulevards, suburban and country road levels for miles lakeward and inland, afford the best practical demonstration for vehicular, cycle, and automobile service. So let the watchword be, Everybody steammobile for the Delta and Electric cities.

"R."

#### CRUELTY TO HORSES.

HORSES are the most abused of animals; not only because they happen to be the most used and the most useful, but rather, I think, because nature, for some mysterious reason, has denied them the audible expression of pain, such as is possessed by the cat or the dog. Horses when wounded on the battlefield emit a piercing scream—at least, cavalrymen who have been in action affirm this. But most horses that die in pain expire in silence or utter merely a moan or whine.

The cart horses of our busy cities make no audible complaint under the lash of the whip, the strain of an overload, or the stupid jerkings of the reins by ignorant drivers. It is of these horses—the working class in general—that I write. If their practically absolute dumbness be conceded, it must also be admitted that to this extent they are handicapped in their appeal to humanity.

Imagine, for instance, the pandemonium of our business streets if to the shouts of the drivers, to the creaking of the trucks, and to the snapping of the whips should be added a cry of the abused horses.

The mere thought of such a possibility is sufficiently harrowing to prove the importance of the consideration which suggests it. Under such conditions, moreover, half of the cruelty which we see daily would cease; for most of it is due to thoughtlessness or absolute ignorance.

The voice of any brute or animal raised in pain makes a direct appeal to human sympathy. The center of pity seems even nearer to the ear than to the eye. The action of sound on this center seems more sudden and more direct than that of vision. Words awaken our sympathy by persuasion; a pitiful sight awakens it by a process of logical reasoning, however rapid; but a cry of pain takes us by surprise, and seems to touch the sympathy without any intermediate process.

We can turn away from a sight that offends, but we cannot close our ears to a cry of distress. Even if it fail in its appeal to the

sensibilities of the offender, it is sure to prove effective in awakening the fear of discovery; for cruelty and cowardice are closely allied.

How many passers-by would stop and interfere if their attention were attracted and fixed by the moan of an ill-treated horse? As it is, we notice only what we chance to see, and we often make a point of not seeing. It is so convenient just to cross the street, sometimes.

The dumbness of the horse, therefore, is undeniably a screen to the cruelty of its driver. But why should so many drivers be cruel? Is it merely inborn wickedness? I think not. Like much of the evil in this world, it comes principally from ignorance. The ethics of humaneness must be taught and acquired as any other inborn capacity must be developed in order to mature. Consider the care with which children are taught the doctrines of kindness and thoughtfulness, and of the time spent and the difficulties met with in grafting these lessons on the youthful mind. If a child pricks some animal with a pin it is amused at the creature's jump or wiggle, but has no consciousness of having caused pain until told that it has done so. Johnson once said: "Pity is not natural to man. Children are always cruel. Savages are always cruel. Pity is acquired and improved by the cultivation of reason." The good doctor never said a truer thing.

Let us consider for a moment the "cultivation of reason" in the average driver. Born to poverty and hardship, bred himself among blows and curses, what wonder that he bestows them freely and thoughtlessly on the dumb brute that helps him to earn his daily bread. To such a man a horse can be little more than a dummy engine. Yet to such men largely is intrusted the handling of an animal which of all others should have tender and minutely watchful care. The horse can indicate no desire, and he can make no audible complaint of suffering. He is entirely dependent upon sympathetic forethought, and even that, to be of use, must be backed by experience and knowledge. Look at the retinue that attends the pampered racehorse, and compare his lot with that of the average work horse.

If the "cultivation of reason" is requisite to the humane handling of horses, who should bear the blame for the general lack of it? Surely not the ignorant driver so much as the careless employer. The poor man has a living to make as best he can, but the rich man has no right to entrust him with horses. The head of a firm, who will often spend weeks and interview twenty applicants before choosing a coachman, will seldom hesitate to employ the first strong and honest man to drive his business trucks. This is the very core of the trouble—carelessness or thoughtlessness on the one hand and ignorance on the other.—*Our Animal Friends.*

OUR ANIMAL FRIEND.

#### CORAL AND PEARL FISHERIES OF COLOMBIA.

CONSUL GENERAL H. A. GUDGER, writing from Panama, says:

The following notice, dated Panama, February 20, 1901, appeared in a local paper of recent date and is an official announcement by the Panama government of the intended sale of the rights of the fisheries at the Pearl Islands:

"The government will shortly accept bids for the right to work the pearl and coral fisheries in Colombian waters for a term of fifteen years. To intending bidders for the said right, full particulars will be furnished at the Government House."

For something like a hundred years and more, the small group of islands fifty miles to the south of Panama, known as the "Pearl Islands," have been famous for their remarkable yield of pearls and coral. During certain seasons of the year, when the waters are unusually clear, these waters are worked by divers, and many pearls of great value have been found there. The pearls rank well in grade and color; in the latter respect, they range from the pure white to green and lead gray and frequently jet black.

These fishing grounds have been a source of great revenue to the government, as well as to the few more fortunate finders. Some little expense is attached to the business, as it is necessary to have experienced divers and men thoroughly versed in the business.

It is estimated that the shell of the oyster, commonly known as the mother-of-pearl shell, if trimmed and shipped to Europe or the United States, would be sufficient to defray all ordinary expenses and leave the find of pearl as a clear profit. It is not common to have valuable finds, yet the fisher is sometimes rewarded with pearls of great worth. Some two years ago, a small boy, while diving in



the shallow water more for sport than work, found a pearl which he sold to a local dealer for \$4,000 silver (\$1,760). This dealer delivered the same pearl to a buyer in Panama and received \$10,000 silver (\$4,400) for it. This pearl is now in Paris, and an offer of \$6,000 gold has been made therefor and refused.

Formerly, those who worked in these waters paid a percentage on their finds; later, an annual tax. It seems that now the government has decided to sell the exclusive right to the highest bidder for a period of fifteen years.

BETTER TRANSPORTATION FACILITIES WANTED.

The burden of most of the consular reports from South America is the need of better facilities of steamship communication with the United States and of American banking institutions, enabling us to establish closer and more systematic relations. Upon this point, the *New York Journal of Commerce* said editorially in issue of January 12, 1901:

"One of the strongest arguments which can be made under present conditions for a more liberal system of credit issues is its effect upon our competition in foreign markets. While the manufacturing producers of the United States contend only for the home market, they were under a common disadvantage, barring differences of locality, in the restrictions imposed upon the issue of instruments of credit. Now that the world has entered into the struggle for the control of colonial markets and the undeveloped countries of the Orient, every factor which contributes to efficiency and economy in the methods of the producers of any nation contributes by just so much towards their ability to compete with foreign rivals. The control which British and German merchants have long retained over trade with South America, in the face of appeals to Pan-American patriotism, elaborate conferences, and advice by United States consuls how to win the southern market, has long afforded a striking example of the power which comes from control over the agencies of credit. Foreign banks financed in London have power to use their credit much as they please, to issue circulating notes under local conditions, and to keep only such reserves as sound banking policy suggests. These unfettered powers and the possession of large capital have enabled them to grant long credits, sell exchange upon favorable terms, and to offer accommodations to the international traders which could not be offered by Americans to theirs."

THE TWENTIETH CENTURY GIRL.

She's snappy and smart as the hottest red pepper,  
In grace with the angels she's closely allied,  
In lightness no queen of the turf can outstep her  
Or hold up a head with more beautiful pride.  
Her smile but reflects the bright spirit within her,  
Her lip has a proud "don't-you-jolly-me" curl,  
And, be she a saint or an innocent sinner,  
There's none like the twentieth century girl.

Her laugh flows as sweet as the ripple of streamlets,  
Her song would the ear of an angel entrance,  
Her eyes are so soft that they seem little dreamlets,  
A challenge to love in their every glance,  
She seems the real acme of female perfection,  
In beauty's great diadem she is the pearl;  
There's scarcely a flaw that demands a correction  
Observed in the twentieth century girl.

In shop or boudoir, in the parlor or kitchen,  
She shines with the light of American grace,  
She's all we could ask in her figure, and rich in  
Dame Fortune's best dower, her beauty of face.  
Her modesty sometimes seems tardy in action  
When dancing in gayety's maddening whirl,  
And then her 'cute boldness seems but an attraction  
Quite fitting the twentieth century girl.

Without her this earth would be but as the setting  
Of gold with the beautiful gem torn away,  
Its men-folk but growling old animals, fretting  
In solitude's gloom for a twinkle of day.  
Then here's a hurrah for the sparkling young jewel!  
'Mid all of earth's treasures the daintiest pearl—  
She sweetens her cup—she's the salt in life's gruel,  
The peerless, chic twentieth century girl.

Denver Post.

## Items of Interest.

MAMMOTH CAVE.

AMONG the side excursions proposed for the visitors to the C. B. N. A. at the Cincinnati Convention is a trip to Mammoth Cave, Kentucky. Many members of the association have been written to regarding the excursion, and have expressed themselves favorably. THE HUB would like to hear from members regarding it. There is much to be said in favor of such an excursion, and possibly there may be good reasons for an opposite opinion, and it is none too early to learn the possibilities.

NEW PUBLICATIONS.

*Induction Coils* is the title of a volume by H. S. Norril (Norman H. Schneider) and published by Spon & Chamberlain, New York, and E. & F. N. Spon, London. In this work the how to make, use and repair the coils receives careful attention, and in addition many other matters in connection with electricity are clearly and concisely considered. Price, \$1.

*Progress of Invention in the Nineteenth Century*, published by Munn & Co., New York, is a review of the work of the nineteenth century. The work is one that has necessitated a careful study of the wonderful progress of the inventions of the last century. The subjects are treated in a masterly manner, and care has been taken to securing accurate information, thus making the volume valuable as a book of reference. To the inventor and general reader it offers a field for study and pleasure. The contents are carefully chaptered, making it easy to select individual subjects. It is a large octavo volume of 480 pages; 300 illustrations. Price, \$3; in half red morocco, \$4.

MODERN WOOD FINISHER.

THIS is a small volume devoted to wood finishing, more especially in connection with inside house work. The author, F. Maire, formerly editor of *Painting and Decorating*, takes the matter up in a systematic and practical manner and follows in details of tools and appliances, materials, methods of working, polishing, woods, etc. It is a useful and a convenient volume for the painter. Price, 50 cents.

MY AUTOMOBILE BOY.

Is the title of a song published by Chadwick Music Publishing Co., words and music by M. N. Hinds, to the praise of the automobile boy, which will amuse the lovers of the horseless vehicle.

"BOOKING ORDERS."

ALBERT LEISURE has arranged a new version of "Glory! Glory! Hallelujah!" for The O. Armleder Co., of Cincinnati, O., in which the merits of the company's wagon is told in verse and set to music. The title page shows Uncle Sam receiving orders from all parts of the world, while England, Germany and France stand looking on.

SOMETHING NEW—WHAT DEALERS WANT.

IN another column will be found the advertisement of "Number Eighty-three" one horse dray or truck, made by the Auburn Wagon Co., of Martinsburg, W. Va. This company have arranged where by mentioning that "you saw it in THE HUB," a special rebate will be given. These little trucks are inexpensive, serviceable and adaptable for all kinds of general hauling, but especially convenient for carriages, etc. We understand that they can be retailed for less than \$75, with a good margin for the dealer. The Auburn Wagon Co. are also builders of the celebrated Auburn steel-axle farm and team wagons, which are covered by their world renowned iron-clad guarantee. Read the special offer on another page on "Number Eighty-three" one horse dray. Light enough for one, but strong enough for two horse loads. Just what dealers have long wanted.



## WORKS OF PANTASOTE COMPANY.

PANTASOTE, the famous substitute for leather, was introduced nine years ago, in the face of many prejudices that existed against the "imitations" of leather, as up to that time there had never been a material that could in any way be called a "substitute" for leather. So many imitations having proved failures that when the Pantasote Company made the strong claim that Pantasote was equal to and in some respects superior to leather, it was scouted as incredible. There remained but one way for the manufacturers to prove their claims, and that was by practical tests. These were made by leading furniture makers, railway and steamship lines, street car and railway coach builders, and with the result that this wonderful material proved itself to be everything that its manufacturers claimed. Many carriage builders were quick to see that a material worthy to supplant leather in car, steamship and furniture upholstery was worth considering as a substitute for leather in carriage work. The result of experimental work was a triumph for Pantasote in every way. It seems



PLANT OF THE PANTASOTE CO.

almost impossible that any material could possess the number of virtues that are claimed for Pantasote, but every claim has been put to severe tests and satisfactorily substantiated. For seats and backs it is admirable. It has all the beauty and richness of leather, and is claimed to surpass it in durability. It is water-proof, stain-proof, grease-proof, fire-proof, and germ-proof. Water—salt or fresh, hot or cold—has absolutely no harmful effect on Pantasote; it does not harden, curl, shrink, crack, or peel. A carriage upholstered with this material may be exposed to all sorts of weather without damage. Pantasote never rots, it contains no rubber nor cellulose, it is odorless, never becomes sticky, and being non-absorbent, it will not collect nor hold disease germs. For this reason, among others, Pantasote was selected by the United States army officials for upholstering the army ambulances used in the Spanish war. This material is fire-proof, and a burning match or lighted cigar dropped on a seat upholstered with it will not do the slightest damage.

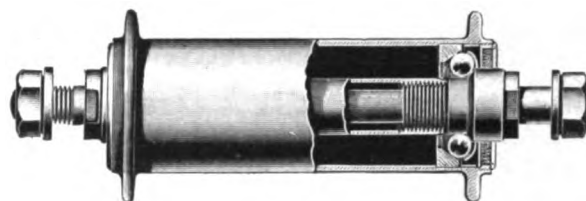
For carriage curtains, boots, and aprons special weights of Pantasote are made, and for these purposes it has no superior, as it stands folding and rolling indefinitely, being always flexible and never cracking nor scaling. The application of soap and water makes Pantasote like new, and the fact that this material will stand all kinds of rough treatment with but little sign of wear and that it may so readily be cleansed, makes it most economical for use in the building of carriages. The Pantasote Co., 29 Broadway, New York City, will gladly send samples on request. All they ask is that you send for a piece and test it in any way you see fit. If you do that the manufacturers feel that you will agree that Pantasote is a most wonderful material and well entitled to the popularity it has gained.

## NEAT PAPER WEIGHT.

ONE of the neatest paper weights that has reached our office is that of the Mander Brothers, varnish manufacturers, of England, and having a New York office for the care of their American trade. The weight is a glass disk about  $3\frac{1}{2}$  inches in diameter, with the letters of the words "Mander's Varnishes" and the company's trade-mark ground into the flattened bottom, the letters being colored blue and the trade-mark red, giving a pretty effect when the weight is in position.

## SULKY HUB.

WE illustrate herewith a sulky hub brought out by I. A. Weston Co., of Syracuse, N. Y., shown in connection with their K. O. axle designed especially for sulkies. These hubs have been thoroughly



SULKY HUB.

tested and the axle's value as an anti-friction device fully proved, placing the hub and axle in the foremost rank. Builders of sulkies and like gears should consult this company before making purchases of supplies required.

The improvements added by the I. A. Weston Co. in this season's sulky and speed wagon wheels are those that every horse owner and driver can appreciate. The ball races have been enlarged, taking a larger number of balls; the diameter of cones increased, allowing  $\frac{3}{8}$  in. or 7-16 in. axles to be used. They can be supplied with either the knock-out bolt pattern axle or with the regular threaded axle and



SPEED WAGON WHEEL.

cones. With the knock-out axle style the new cone locking device can be used. With this combination, by taking off one axle nut the wheels may be removed for repairs or shipping without disturbing the adjustment of bearings. The Weston Co.'s wheels and hubs have been constantly growing in favor, year after year, until they are now used by most of the sulky and speed wagon manufacturers in all parts of the country.

## TUFTING MACHINE.

THE Novelty Tufting Machine Co., of Chicago Ill., manufacturers of tufting and other upholstery devices, have issued a booklet explaining the workings of their tufting machine for tufting cushions, backs, etc., for carriages, illustrating the machines and work done by them, and publishing in addition testimonials of a large number of carriage manufacturers who are using their machines. Send to the company for a copy.

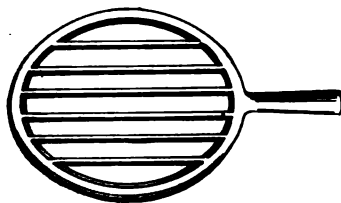
## NOW WITH THE M. SEWARD &amp; SON CO.

MR. S. T. CHAMBERLIN, who has represented the H. D. Smith & Co., of Plantsville, Conn., for many years, is now on the road representing the M. Seward & Son Co., of New Haven, Conn., manufacturers of carriage hardware and general forgings. THE HUB bespeaks for Mr. Chamberlin a cordial reception by the trade. The Seward Co. are erecting an entirely new plant on Grant street, New Haven, and will soon be in a better position than ever before to supply the trade with goods in their line.



**CARRIAGE STEPS.**

THE Kelsey Co., New Haven, Conn., ask of the carriage and automobile trade that they look into the merits of the Beecher patent



BEECHER CARRIAGE STEP.

carriage steps, which are made round, oval and square, and in different sizes. Write them for catalogue and prices.

**A NEW RUBBER TIRE MACHINE.**

MR. H. C. PALMER, of the Pennsylvania Rubber Co., of Erie, Pa., has recently had patents allowed on a machine for putting on solid rubber tires. It is one of the most rapid working devices of the kind now in the market. It is simple in its operation, and it costs much less than most other machines. It is just what the small carriage manufacturer and repairer needs for the putting on of rubber tires on new or old work.

**THE TUTHILL SPRING CO.**

THIS concern, which is located at Chicago, Ill., has been in existence for twenty-one years, but its rapidly increasing business would seem to show that it had not yet reached maturity. They are running at present twenty-two hours a day in an endeavor to keep up with their orders, which come in to them from all parts of the United States, and, in fact, of the world.

**UP-TO-DATE MANUFACTURER.**

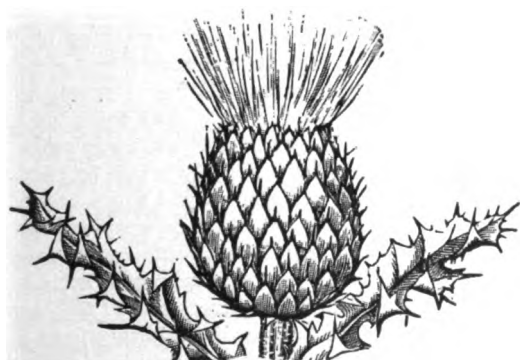
THE J. H. Neustadt Co. of St. Louis Mo., equipped a factory a short while ago to make ball bearings and long distance axles, wire wheels, hubs, steel rims, sulky fittings, tubular running gears and a full line of supplies for carriage and automobiles. They also are the Southwestern distributing agents of the Kokomo Vehicle Tire. As they are equipped to turn out large quantities of stuff and make all the parts in their own shops, they particularly solicit the trade of manufacturers and the larger buyers. A catalogue is issued in the interest of their goods, and mailed free on application.

**JACKSON CUSHION SPRING.**

THE twin cushion springs manufactured by the Jackson Spring Co., Jackson, Mich., are recommended by the manufacturers on account of their wearing qualities and ease of adjustment. By writing to the manufacturers you can obtain a descriptive circular in which their advantages are fully set forth. See their advertisement in this month's HUB.

**THEIR TRADE MARK.**

THE attention of our readers is called to the Trade Mark, illus-

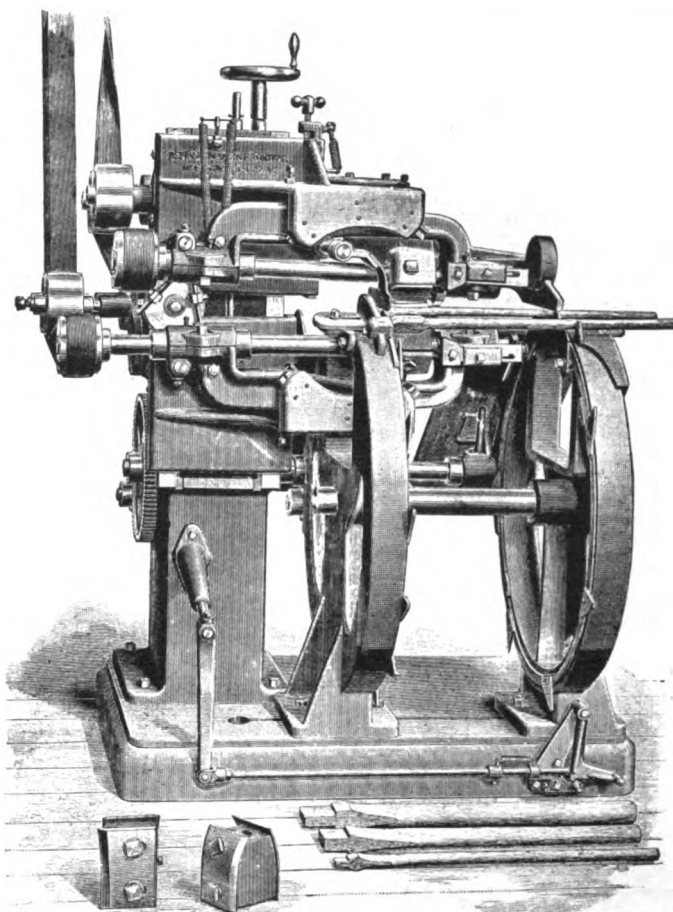


Trade - Mark.

trated herewith, of the Peckham Varnish Co., of Boston, Mass., a notice of which appeared in May HUB. Having seen it you won't forget it.

**AUTOMATIC SPOKE THROATING MACHINE.**

THIS engraving represents an automatic spoke throating machine which is used by spoke, wheel and wagon manufacturers to rapidly and accurately throat both sides of spokes at one pass through the machine. It is calculated to handle either small or large spokes in common, Sarven, Warner and sharp-edged patterns at the rate of 15,000 per day, doing the work smooth, and securing any shape of throat desired. The column is massive and mounted upon a broad heavy base. The saddles supporting the cutterhead spindles are gibbed to the column and provided with a vertical adjustment by hand-wheel to regulate the thickness and position of throat and size of spokes. Both cutterheads can be adjusted together to regulate the position of the throat with the tenon, without altering the adjustment for thickness of throat. The cutterhead spindles are supported in substantial frames which are attached to the saddles in ball bearings for securing the oscillating movements to the heads.



AUTOMATIC SPOKE THROATING MACHINE.

An ingenious equalizing device is fitted to the spindle boxes to secure a uniform oscillating movement. The feeding reels are driven by cut gearing and a friction clutch connected by a convenient foot pedal for instantly starting or stopping the feed. The outside reel turns faster than the one on the inside to carry the spokes to the cutterheads in a circular path for throating thinner on the face than back of spokes, similar to that important feature secured heretofore by the hand-feed throater. A cam shoe is fitted to each cutterhead box near the heads, and as the spokes are fed to the heads the cam shoes travel over the barrel of the spokes and oscillate the cutters in a path to correspond with the shape and size of spoke fed into the machine. The spokes to be operated upon are simply placed upon the feeding reels which automatically present them to the cutters when both sides are treated at one time and the finished spokes are discharged into a rack at the rear of the machine. Manufactured by The Defiance Machine Works, Defiance, O.

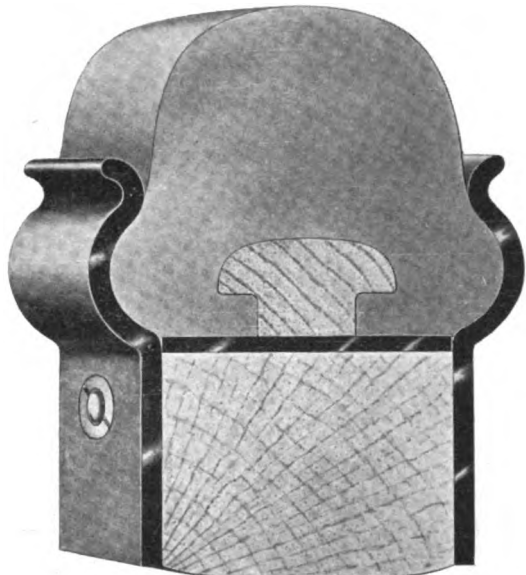
**SEND FOR A COPY.**

THE G. & J. TIRE Co., of Indianapolis, Ind., have issued an illuminated catalogue, which is attractive in appearance and filled with information regarding their tires, their use and advantages. This little morceau should be in the hands of all interested in rubber tires, whether they be for carriages, bicycles or automobiles.



**DOUBLE COMPRESSED TIRE.**

THE claims of the new "Double Locked Compressed Tire," which Dewes & Whiting are now offering to the trade, are so strong and apparently so well founded that they cannot fail to attract the attention of every manufacturer and dealer in the vehicle industry, and will certainly make a strong impression on consumers. The claims are as follows:—The principle of compression in using rub-



DOUBLE COMPRESSED TIRE.

ber to withstand wear is a great advantage. The construction of the two-side flanges separately allows the introduction of compression and also the moulding of the tires in one piece if desired. Moulding in one piece gives a uniformity to the tension of the rubber from surface to base, instead of stretching the surface, where all the wear comes and compressing the base, as is the case with strip tires wrapped around a wheel. The tire is moulded wider than the felloe and larger in diameter, being compressed by tightening up the transverse bolt nuts, which hold the flange rings together and on at the same time. Cuts and tears have no disposition to gap and extend as the compression tends to hold them together. The ease of removal and attaching will make it possible for the consumer to apply his own tires, thus saving the shipping of wheels for repairs, or re-rubbing. In case of a deep cut, a section of the tire can be removed by cutting through to the base and a new piece inserted. It is held in place by the central lock; the compression preventing all the slipping will give the same results as replacing a tire. The central T-shaped lock being of hard wood does not corrode, and owing to its shape cannot cut the tire. These qualities, together with the fact that it cannot creep, makes the durability of the tire equal to the wear of the solid rubber down to the edges of the flange rings. This company is prepared to furnish side or flange rings to the trade. See advertisement in this month's HUB.

**A NEW CORPORATION.**

THE Roller Bearing and Equipment Co. of America is being incorporated in Delaware with a view to the manufacture of all kinds of bearings and small railroad equipment, its factory to be located at Keene, N. H., and its principal promoters are Mr. W. S. Rogers, largely and well known to the trade for several years as general manager for the Ball Bearing Co. of Boston; Mr. E. P. Wells, president of The Steamobile Company of America, at Keene, and friends of these two gentlemen. It is announced that the new company already has part of its machinery in place and is ready to accept orders. Mr. Rogers' friends will be pleased to see that he has so soon re-established himself in business after voluntarily severing his connection with the Ball Bearing Co. of Boston, and it is safe to predict that he will carry with him a fair share of the trade which he has done so much to build up.

A LITERARY lady told Dr. Johnson that she was pleased to find no improper words in his dictionary. "Ah," said he, "you have been searching for them, I see."

**VEHICLE SPECIALTIES.**

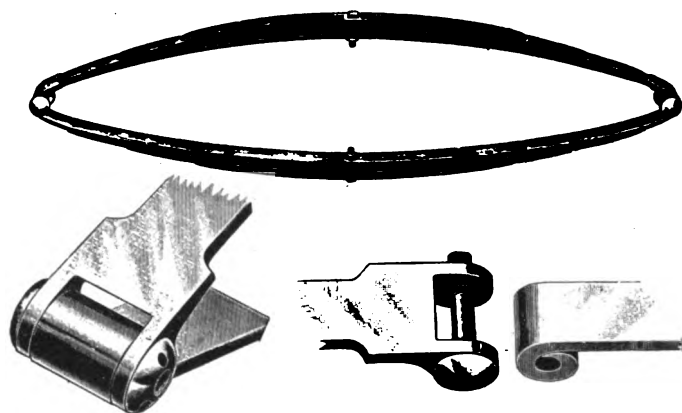
WALBORN & RIKER, of St. Paris, O., manufacturers of pony and other specialties in the carriage lines, have issued Album No. 14, in which they illustrate and describe a large line of pony and other carriages, consisting of carts, surreys, phaetons, traps, driving wagons, etc. The line is an inviting one both in character of styles and variety. No dealer should be without this catalogue.

**HAVE INCREASED THEIR CAPACITY.**

THE Timken Roller Bearing Axle Co., of St. Louis, reports having recently enlarged the capacity of their factory, but, notwithstanding they are running night and day, are unable to keep up with orders, especially on the larger sizes. These axles, which have now been in actual service for over four years, have been demonstrated as practical, draft-reducing and durable, and the exceedingly satisfactory results experienced by vehicle owners who have given them a trial are creating an unexpectedly large increase in demand. These bearings are especially well adapted to automobiles, and are being generally adopted for this class of vehicles. A very broad warranty is placed on the Timken Roller Bearing Axles (see advertisement in this issue), but so far not one set has been rejected under its terms. This company will have quite an elaborate exhibit at the Pan-American Exposition at Buffalo this summer, and visitors should take advantage of the opportunity to familiarize themselves with the merits of these axles.

**DETROIT OPEN SOLID HEAD.**

THE Detroit Steel and Spring Co., Detroit, Mich., manufacturers of carriage springs, call the attention of the carriage trade to their open solid head for springs, illustrated herewith. The eye is upset,



DETROIT OPEN SOLID HEAD SPRING.

and is about one-third heavier than the main cap. The eye is drilled thus, securing a perfect bearing the whole length of the bolt. The spring is recommended for its fine appearance and riding qualities and the absence of rattle.

**SCRANTON IMPROVED UPRIGHT POWER HAMMER.**

WE herewith give an illustration of the improved upright power hammer as manufactured by The Scranton & Co., New Haven, Conn., with all improvements to date. Among the recent improvements we would mention the device for connecting the ram to the spring, which is a feature of great importance, and can now be regulated so that an even tension is at all times brought to bear upon the belt. The ram is so guided in ways, both front and back, that it is impossible for the dies to get out of line, or to strike other than accurate blows, a feature which is highly prized by operators working on the various classes of forgings which are formed from impressions in the dies. The anvil block is separate from the frame running through the same, and rests directly on the foundation. It is separated from the frame or main casting in such a manner as to greatly relieve the jar which the other parts of the hammer would otherwise receive, thereby lessening the liability of the bolts granulating, and other parts getting loose and causing expense for repairs. The builders of these hammers have had a long practical experience in the use and manufacture of power hammers, and are placing this hammer on the market, believing it to be as near perfect as a power hammer can be built, and have proved that it will withstand



the severe use which a power hammer receives. The dies may be made to key either from the front or side, as required. All parts are interchangeable, and duplicates may be obtained at any time. Changes in the form of these hammers can be readily made to adapt the hammer to any special requirements, and a large stock of the regular hammers, with parts, are kept on hand, from which prompt shipments can be made. The hammer built for the special use of

#### AN ACTIVE HOUSE.

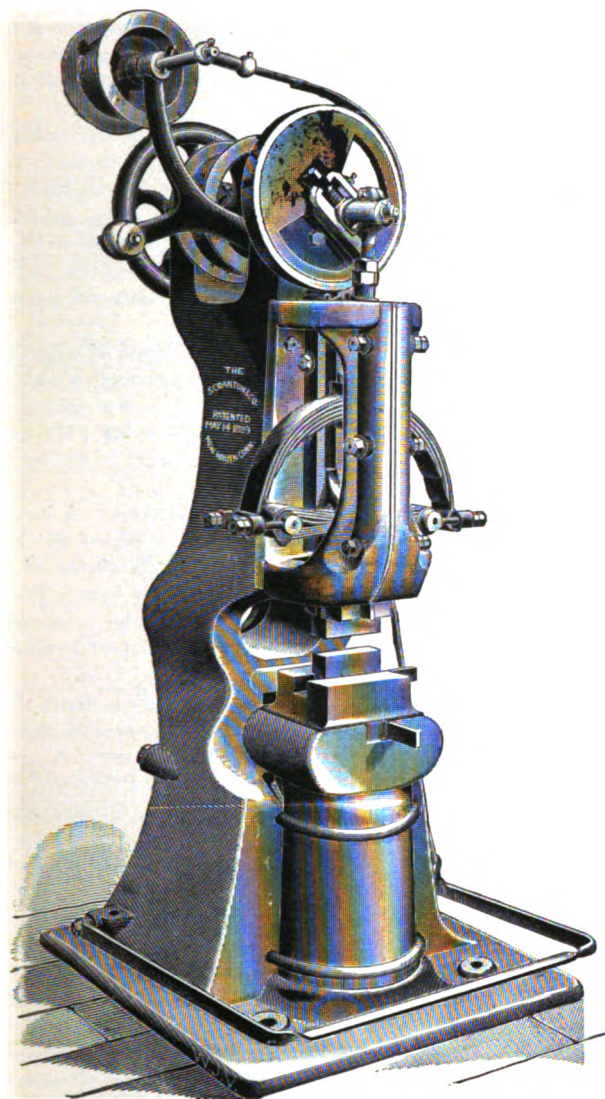
THE Pennsylvania Rubber Co., of Erie, Pa., although not an old house, is a progressive one, and one that is doing a large and growing business in the manufacture of solid and pneumatic rubber tires for carriages and automobiles. The factory is being run to its utmost capacity, which is proof of the satisfactory character of the output. The general superintendent, Mr. T. R. Palmer, is well known in the rubber manufacturing business, having been in the employ of the B. F. Goodrich Co., of Akron, O., for a number of years. His long experience has taught him how to make a rubber composition that has wearing qualities combined with resistance.

#### COACH VARNISHES.

BARRY BROTHERS' factory at Detroit, and offices in all our large cities, have issued a descriptive list of their fine coach varnishes, prices, etc. Send for a copy, as the house is one that can be relied upon to fulfill all the claims they make.

#### FAY & EGAN BAND SCROLL SAW.

OUR illustration presents a new machine, which was patented February 27th, 1900, and has just been placed on the market by J. A. Fay & Egan Co., of 421 to 441 West Front street, Cincinnati, Ohio, and has several mechanical advantages which place it easily in the lead among band scroll saws. The lower wheel is solid, preventing the circulation of so much dust, and the weight gives it momentum, so that the upper wheel does not overrun it. The knife edge balance used in connection with the straining device maintains at all times

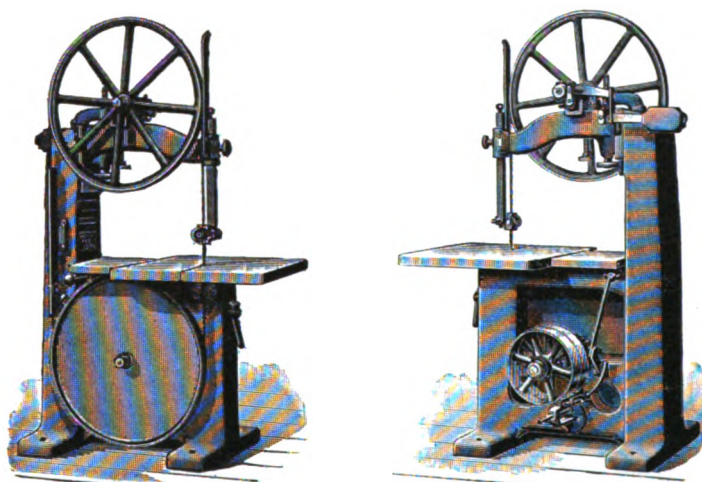


SCRANTON IMPROVED UPRIGHT POWER HAMMER.

manufacturers of carriages and all classes of carriage irons, is particularly strong and durable; simple in adjustment and capable of taking care of a large range of sizes and shapes of stock. Heavy or light blows can be given, at the will of the operator. The hammer is at all times under his control to start or stop instantly. But little space is required, and, on account of its construction but little power is needed. These are all features of great value in a power hammer, and are worth the careful consideration of the forgers of iron and steel.

#### THE PROOF OF THE PUDDING IS IN THE EATING OF IT.

THE superior quality of the "Hay-Budden" anvils is best demonstrated by their ever increasing sales. The company reports that in order to keep up with the heavy demand they are operating their entire plant day and night, having started the night shift on the first of the year. They have trebled their capacity since their fire about one year ago, and have now in the course of construction additional machinery which will still further increase their output. As special evidence of the high quality of these anvils the fact is cited that the United States Government specifies the "Hay-Budden" anvil. Numerous repeat orders from the railroads and large industrial corporations testify to the same fact, while hundreds of letters from blacksmiths all over the world contain words of praise for these celebrated tools. The fine exhibit of these anvils at the Pan-American Exposition, Buffalo, will be of special interest to blacksmiths. They will be found in Block 45, Machinery Building.



BAND SCROLL SAW.

and under all conditions a uniform tension on the saw blade, the feature on a band saw which is so necessary and still so seldom found. The patent roller guide and self-oiling loose pulley are great improvements over the ordinary machine of this class. The tilting device to the upper wheel, for tracking the path of the blade, is new, and a decided improvement, and will be much appreciated. The upright column, which has no gooseneck, is cored and heavy, with sufficient floor space to prevent vibration, and can be run much faster than ordinary saws. The manufacturers will furnish prices and full particulars on application, and will also send their large illustrated poster.

#### THE STAPLES & HANFORD COMPANY.

THE above-named company is located at Newburg, N. Y., where they conduct an extensive business in the manufacture of spring work for carriage and car seats; also for all kinds of upholstered furniture. Since the introduction of these springs to the carriage trade a marked and beneficial change has been made in the cushion backs of light carriages, and the company now claim to make 70 per cent. of those now used. The company has recently been reorganized with a capital of \$300,000 and will greatly increase their output, this being made necessary by the steady increase in the demand for their springs, which have been thoroughly tested by carriage builders to their satisfaction.



### KERATOL CO.'S NEW FACTORY.

THE Keratol Co. have built another factory along the new line of the Pennsylvania Railroad in Newark. In addition to the two large brick factories and numerous small buildings is factory No. 3, which is 150 by 50 feet on the ground and three stories high. This factory is also of brick. It will be immediately provided with a complete equipment to increase the variety of the Keratol product. This company not only supply the carriage and automobile trade with a superior leather cloth, but also cater very extensively to the book-binding and furniture trades.

### A LARGE GOVERNMENT ORDER.

ELLIS OMNIBUS & CAB Co., Cortland, N. Y., have received an order from the United States Quartermaster's Department for twelve wagonettes.

### A FRIENDLY TRIBUTE.

IN July last Fred A. Tebbetts, of Sanford, Me., traveling for Wilder & Mallon, carriage dealers of New York City, suffered a stroke of paralysis, which compelled him to give up business and remain at his home. Some months later, a number of his fellow carriage salesmen met in Boston and, knowing how irksome such a confinement was to an energetic man like Mr. Tebbetts, resolved to send him a reminder of their esteem for him, in the way of something that would contribute to his personal comfort. After canvassing the matter thoroughly they failed to settle upon any one article, and finally decided to send a cash remittance instead. Fred H. Gowen was given charge of the matter and in a very short time he collected from fellow traveling men the sum of \$230, which he forwarded to Mr. Tebbetts, and received the following acknowledgment for the same:

SANFORD, ME., May 28th, 1901.

FRED H. GOWEN, Little Falls, N. Y.:

MY DEAR FRIEND:—Yours of the 5th with check enclosed for two hundred and thirty dollars (\$230) duly received, and when I realize the source from which it came, it only proves to me the friends I have in the trade, and that they have not forgotten one afflicted as I am. Please inform my friends and fellow travelers how fully I appreciate their noble act, and assure them that it will be used only for a good purpose.

I will take pleasure in writing them all my personal thanks, for in my present condition writing is about the only thing I am capable of doing. I was very much pleased that you sent me a list of the donors, so that I may be able to write them a personal letter.

Hoping to be able to meet you all at the Convention next Fall, and again extending to all my heartfelt thanks, I remain,

Sincerely yours,

F. A. TEBBETTS.

The spirit that prompted the whole movement and the responses which accompanied individual remittances evidence the good will existing among carriage traveling salesmen. We are pleased to notice among the list of names of contributors a goodly number of names of members of the C. H. A. T., who thus acted up to the spirit of the association in aiding a brother in distress, even outside of the association work, a further proof of the fraternal feeling engendered by mutual organizations. THE HUB congratulates donors and recipient and joins in the hope to see Mr. Tebbetts at his post at the Convention next Fall.

### HOW TO FILE AND SET A SAW.

A SAW is a series of cutters arranged either in one line or in two lines, according to the work to be performed; and all saws used in woodwork (and it is such of which we speak) may be included in two classes—those which cut across the grain and those which cut lengthwise of the grain. The latter class has its teeth or cutters formed so as most to resemble a narrow chisel or plane-bit. The teeth of the former class may be regarded as knives which cut, or ought to cut, the sides of the kerf smoothly at the same time that they force out or split off the intervening wood.

Many mechanics are accustomed to take their saws to a professional saw filer and setter, acknowledging their own inability to perform the operation as it ought to be done, and preferring to incur expense rather than use a badly-sharpened tool. There is no necessity for this, and any man of ordinary intelligence and skill in the use of tools may easily acquire the simple art of saw filing and setting.

In order to do this the following points must be observed: The teeth in crosscut saws ought to cut both ways in traversing through

the wood, and the teeth of both crosscut and rip saws should be as near as possible of equal length and sharpness. The bevel on the tooth should be more acute for soft than for hard wood. In order to secure the same bevel on all the teeth of a crosscut saw, the file must be held at the same angle in filing each tooth, and if the saw has been previously well filed the same number of strokes of the file will be required for each tooth, provided an equable pressure is maintained.

If the teeth are uneven in length their points ought to be first leveled with a flat file and the beveling be subsequently governed by that point. As soon as the point becomes well defined on each tooth, providing the proper bevel has been maintained throughout, the operator should proceed to the next tooth, and so on.

The saw should be filed from the handle towards the point, as in no other way can a proper bevel be obtained and maintained throughout. If a crosscut saw be found a little high in the middle, it may still work well, but in no case should it be lower in the middle than at the ends. The feather should be taken from the sides of the teeth by a straight flat file or a whetstone with a plane surface, laid along the sides of the teeth, and drawn smoothly along without much pressure. This may be done after the setting.

A rip saw will be found to work better in all kinds of wood if filed a trifle beveling, although in perfectly straight-grained wood it will work well if filed straight across. This bevel is best given to the teeth of these saws after they are set, the file being held at right angles to the teeth. Hard wood requires more bevel in the teeth of a rip saw than soft wood.

The setting of a saw is a matter of great importance. A large proportion of the power required in working a saw is caused by the friction of the plate on the sides of the kerf, and it is the object of setting to lessen this friction by increasing the width of the kerf. The making of saws thinner at the back than at the cutting edge is sound principle, and saves much power that would otherwise be expended in friction.

A difference of opinion prevails among mechanics about the best way to set saws, some maintaining that the hammer and punch are superior to any of the patent setting tools now in use. A series of experiments which we saw performed some years since convinced us that the hammer and punch were imperfect tools for this purpose, although there is no doubt that the principle of the hammer and punch, as applied in some of the saw setting tools which have been invented, is the best. A tooth bent and set by a blow will remain where it is put. This, on the contrary, cannot be said of teeth which are bent by sets which act on the lever principle. Nevertheless, we have seen saws very perfectly set by the latter kind of tools. Whatever means are adopted, uniformity is the object to be secured; the amount of set required being dependent, of course, upon the nature of the work the saw is intended to perform, and, therefore, a matter to be left to personal judgment.—*Calvert's Mechanics' Almanack.*

### EXPIRED PATENTS.

THE following list of patents, trade-marks and designs of interest to our patrons are furnished by Davis & Davis, solicitors of American and foreign patents, Washington, D. C., and St. Paul Building, New York City. A copy of any of these may be had for 10 cents by sending to the above firm.

#### PATENTS EXPIRED APRIL 1, 1901.

- 296,045—Buggy Top—C. Oliver, Louisville, Ky.
- 296,090—Vehicle Top—E. Warren, Ligonier, Ind.
- 296,113—Vehicle Spring—C. Behlem, Cincinnati, Ohio.
- 295,963—Spring Seat for Vehicles—L. Warren, McGrawville, N. Y.

#### PATENTS EXPIRED APRIL 8, 1901.

- 296,307—Vehicle Wheel—J. Bell, Nashville, Tenn., assignor to J. Cole and R. Armsted, same place.
- 296,316—Two Wheeled Vehicle—L. Clark, O. Franks and G. Baumann, Doyleston, assignors to J. Warren, Lodi, Ohio.
- 296,323—Self-Oiling Axle for Vehicle—L. Fisher, Walpole, Mass.
- 296,347—Vehicle Spring—R. Mulholland, Dunkirk, N. Y.
- 296,359—Vehicle Spring—C. Saladee, Torrington, Conn.
- 296,400—Jump Seat Vehicle—D. Gale, Salisbury, Mass.

#### PATENTS EXPIRED APRIL 15, 1901.

- 296,717—Self-oiling Axle—E. Baker, Olneyville, R. I.
- 296,794—Thill Coupling—F. Stevens, Waterbury, Conn.
- 296,834—Vehicle Spring—J. Howell, Jackson, Mich.
- 296,855—Vehicle Fifth Wheel—J. Leete, South Meriden, Conn.
- 296,917—Dumping Wagon—T. Boyce, and C. Frische, Brooklyn, N. Y.
- 296,936 and 296,937—Hand Power Vehicle—T. Davies, New York, N. Y.



296,938—Dumping Wagon—L. Dees, Lake Charles, La.  
296,949—Two Wheeled Vehicle—W. Goodman, Fulton, Cal.  
296,979—Wagon Jack—J. Lindsey, Marion, Ohio.  
296,987—Tire Tightener—S. McCay, Topeka, Kan.  
297,034—Carriage-top Fastener—J. Travis, Carson City, Mich.

## PATENTS EXPIRED APRIL 22, 1901.

297,147—Carriage-top—Henry McCurray, Fulton, Ill., assignor of one-half to John Stuart, same place.  
297,348—Skeleton Speed-vehicle—Thos. H. Brown, Chicago, Ill.  
297,358—Two-wheeled Vehicle—Levi Donley, Kalamazoo, Mich., assignor of one-half to Hobert B. Sortor, same place.  
297,370—Wagon-body—Charles F. Folsome, Atoka, Ind. Ter., assignor of one-half to John A. Dillon, same place.  
297,543—Two-wheeled Vehicle—Willis Vandercook, Mason, Mich.

## NEW PATENTS PERTAINING TO THE CARRIAGE TRADE.

652,694—Adjustable Wagon Pole—James Setchfield, Fenton, Mich.  
652,697—Vehicle Brake—James C. Stinson, Centre Point, Tenn.  
652,571—Motor Vehicle—Otto Waechtershaeuser, Elizabeth, N. J.  
652,882—Regulating Device for Riding Carts—Young H. Boudreau, Modesto, Cal.  
653,167—Motor Vehicle—Clyde J. Coleman, Chicago, Ill., assignor to T. J. Ryan, New York.  
653,168—Motor Vehicle—Clyde J. Coleman, Chicago, Ill., assignor to T. J. Ryan, New York.  
653,169—Motor Vehicle—Clyde J. Coleman, Chicago, Ill., assignor to T. J. Ryan, New York.  
653,170—Motor Vehicle—Clyde J. Coleman, Chicago, Ill., assignor to T. J. Ryan, New York.  
653,172—Motor Vehicle—Clyde J. Coleman, Chicago, Ill., assignor to T. J. Ryan, New York.  
652,949—Running Gear for Automobiles—Charles Cotta, Shannon, Ill.  
652,837—Wheel for Vehicles—Michael J. Donovan, Waterdown, Canada.  
652,757—Dumping Wagon—Alexander H. Ege, Mechanicsburg, Pa.  
652,769—Thill Coupling—Albert L. Grant, Philadelphia, Pa.  
652,851—Automobile Vehicle—Hosea W. Libbey, Boston, Mass.  
652,852—Motor-wheel for Vehicles—Hosea W. Libbey, Boston, Mass.  
653,102—Motor Vehicle—Charles A. Lieb, New York, N. Y.  
653,109—Motor Vehicle—John H. Munson, Chicago, Ill.  
653,200—Independent Motor Vehicle—John H. Munson, La Porte, Ind.  
653,182—Wagon Body—Charles A. Quigley, Salt Lake City, Utah.  
653,181—Running Gear for Automobiles—Hiram M. Quick, Paterson, N. J.  
653,046—Wooden Rim for Wheels—Calvin L. Washburn and A. C. Perham, Paris, Me.  
652,980—Rubber Tire for Vehicles—Charles H. Wheeler, Akron, O.  
652,940—Motor Vehicle—George E. Whitney, Boston, Mass.  
652,941—Motor Vehicle—George E. Whitney, Boston, Mass.  
652,942—Motor Vehicle—George E. Whitney, Boston, Mass.  
652,943—Motor Vehicle—George E. Whitney, Boston, Mass.  
652,944—Motor Vehicle—George E. Whitney, Boston, Mass., assignor to Whitney Motor Wagon Co., same place.  
653,607—Body-hanger for Carriages—Samuel R. Bailey, Amesbury, Mass.  
653,497—Pneumatic Tire—John Baker, Meacham, Ill.  
653,542—Singletree Coupling—Amos M. Barker, Bloomington, Neb.  
653,501—Motor Vehicle—Louis S. Clarke, W. Morgan, Pittsburg, and J. G. Heaslet, Allegheny, Pa., assignors, by mesne assignments, to Autocar Co. of Pennsylvania.  
653,287—Shaft or Thill Coupling—Robert F. Cornell, Phillipsburg, Mont.  
653,217—Chafe-iron for Vehicles—Joseph H. Cutler, Medway, Mass.  
653,224—Motor Vehicle—Charles E. Duryea, assignor to Duryea Manufacturing Co., Peoria, Ill.  
653,574—Mud-guard for Vehicles—Dalmer C. Grover, Reading, Mich.  
653,511—Vehicle—Clark C. Hyatt, H. W. Watson, W. Wildanger, and C. B. Sanderson, Flint, Mich.  
653,533—Igniter for Explosive Engines—Fred. A. Law, Hartford, Conn., assignor by mesne assignments to Columbia and Electric Vehicle Co., Jersey City, N. J.  
653,578—Vehicle Body—Harry S. Lee, Tecumseh, Mich.  
653,426—Wagon-pole Tip—Louis A. Nadeau, St. Athanasie, Canada.  
653,480—Running Gear for Vehicles—Martin L. Senderling, Jersey City, N. J.  
653,260—King-bolt Socket—Henry C. Swan, Oshkosh, Wis.  
653,598—Thill Coupling—John Werth, Chester, Pa.  
32,925—Design, Tire Setting Device—John F. Malone, Bement, Ill.  
32,927—Design, Lower Fifth Wheel—Henry C. Swan, Oshkosh, Wis.  
32,928—Design, Body Hanger for Vehicles—Henry C. Swan, Oshkosh, Wis.  
653,837—Thill Coupling—George P. Beasley, Maysville, Ky.  
654,049—Metal Rim for Wheels—Joseph W. Bettendorf, Davenport, Iowa.  
653,652—Vehicle Wheel—Charles Bigelow, Delta, Colo.

653,951—Vehicle Brake—David D. Elder, Philadelphia, Pa.  
653,801—Motor Driven Vehicle—Robert F. Hall, Moseley, England.  
653,803—Shaft-support—Harry Harden, assignor of one-half to J. and M. Carter, London, O.  
653,774—Tire Setter—Johann C. H. Kunz, Cronberg, Germany.  
653,917—Wagon-tongue Support—John C. Lambert, Tonica, Ill.  
654,095—Neck-yoke Attachment—William M. Manuel, assignor to P. C. Cline, Gallatin, Mo.  
653,751—Storm Curtain for Vehicles—Bernard S. D. S. Martin, McPherson, Kan.  
653,815—Vehicle Tire—Allen L. Miller, assignor of two-thirds to N. Blaha and H. F. Erichsen, Chicago, Ill.  
653,689—Thill Coupling—William M. Morton, New Haven, Conn.  
653,877—Motor Carriage—Frank A. Perret, assignor to Perret Storage Battery Co., New York, N. Y.  
653,879—Motor Vehicle—Lucius J. Phelps, Melrose, Mass.  
654,027—Pneumatic Wheel—Joshua Shellabarger, assignor of one-fourth to J. W. Smith, Rockford, O.  
653,974—Fifth Wheel—Henry C. Swan, Oshkosh, Wis.  
653,855—Motor Vehicle—Viggo V. Torbensen, Bloomfield, N. J., assignor to G. T. Harris, Philadelphia, Pa.  
653,858—Thill Coupling—George M. Wright, Winneconne, Wis.  
32,961—Design, Spring for Thill or Shaft Couplings—Albert L. Grant, Philadelphia, Pa.  
654,511—Water-feeding and Air-compressing Mechanism for Motor-vehicles—William R. Bowker and F. P. Sherman, Waltham, Mass.  
654,339—Thill Coupling—Christopher C. Bradley, Syracuse, N. Y.  
654,440—Body-loop for Vehicles—George F. Collmer, South Bend, Ind.  
654,528—Non-slipping Pneumatic Tire—Kanute A. Enlind, Nauvau, Conn.  
654,535—Folding Carriage Step—John E. Glover, Cloud Chief, Okla. Ter.  
654,453—Dump-wagon—John W. Haywood, Syracuse, N. Y.  
654,251—Wagon Running Gear—John J. Hicks, assignor of one-half to J. Garabaldi, Little Rock, Ark.  
654,460—Fifth Wheel—Andrew Kimble, Zanesville, O.  
654,472—Hub-attaching Device—George A. Mayer, Homestead, Pa.  
654,422—Wagon Brake—William B. Stover, South Bend, Ind.  
654,366—Hub for Vehicles—Benjamin F. Sweet, Fond du Lac, Wis.  
654,374—Sand-shield for Vehicle Axles—Edwin H. Wilson, Globe Village, Mass.  
654,501—Attachment for Carriage Boots—George T. Wilson, Moline, Ill.  
33,002—Design, Running-gear Frame for Vehicles—Frederic C. Billings, Hartford, Conn.  
33,003—Design, Automobile-frame—George T. Turner, Philadelphia, Pa.  
654,702—Self-lubricating Axle-spindle—Elijah E. Baker, assignor of one-third to J. E. Baker, Hyde Park, Mass.  
654,704—Thill Coupling—Herman J. Bierhart, South Bend, Ind.  
654,716—Motor Vehicle—Edward P. Cowles, Warren, O.  
654,637—Attachable Sleigh Runner—John E. Hobbs, North Berwick, Me.  
654,897—Vehicle Tire—George J. Keller, assignor by mesne assignments to J. O'Donovan, G. J. Keller, Pittsburg, and W. O'Donovan, Crafton, Pa.  
654,797—Motor Vehicle—Henry J. Lawson, London, England.  
654,741—Motor Vehicle—Hosea W. Libbey, Boston, Mass.  
654,742—Automobile Truck—Hosea W. Libbey, Boston, Mass.  
654,993—Carriage-curtain—William L. Martin, Rancocas, N. J.  
654,754—Spindle Protector for Vehicles—Benjamin F. Nickerson, Webster City, Ia.  
654,756—Lathe for Forming Collars Upon Vehicle Axles—John G. Obermier, Canton, O.  
655,010—Step-frame for Carriage Box-seats—Wilhelm Reeck, Coslin, Germany.  
654,919—Tire—Charles G. Robertson, Glasgow, Scotland, and J. J. Robertson, Leeds, England, assignors of one-third to G. E. Robertson, Montreal, Canada.  
654,773—Wagon-reach Coupling—George W. Whitehead, assignor of one-half to F. Bender, Montezuma, Ia.  
33,034—Design, Automobile Frame—George T. Turner, Philadelphia, Pa.  
655,321—Autotruck Vehicle—James C. Anderson, Highland Park, Ill.  
655,191—Means for Securing Rubber Tires to Vehicle Wheels—Richard A. Brine, Revere, Mass.  
656,159—Buggy Top Attachment—Perry G. Austin, Hecla, Ind.  
656,577—End-gate for Wagon-bodies—William Chater, Denver, Colo.  
656,389—Motor-vehicle—Patrick J. Collins, assignor to Collins Electric Vehicle Co., Scranton, Pa.  
656,172—Vehicle Tire Fastener—James R. Colt, Batavia, N. Y.  
656,396—Motor-vehicle—John W. Eisenhuth, assignor, by mesne assignments, to Eisenhuth Horseless Vehicle Co., New York, N. Y.  
656,450—Brake Mechanism for Carriages—Gustav Fischer, Schoneberg, Germany.  
656,542—Tire Tightener—James L. Ham, Huddleston, Va.  
656,554—Boxing for Vehicle Axles—George H. Leathers, Mount Vernon, Mo.  
656,570—Spring Wagon Gear—Swen F. Parson, assignor to M. D. Shipman, C. E., and S. E. Bradt, De Kalb, Ill.



- 656,375—Vehicle Brake—Joseph W. Rogers, Collomsville, Pa.  
 656,480—Vehicle Lamp—Gustave Schmidt, Newark, N. J.  
 656,483—Motor Vehicle—Walter Scott, Plainfield, N. J.  
 656,332—Fifth Wheel—Claude L. Townsend, Scranton, Pa.  
 656,491—Automobile Vehicle—Waldo W. Valentine, New York, N. Y.  
 656,494—Wagon Brake—Jesse Wheeler, assignor of one-half to L. M. and T. H. Conkling and E. C. Smith, St. Louis, Mo.  
 656,239—Side-board Fastener for Wagon-beds—Simon R. Zimmerman, Amazonia, Mo.  
 656,875—Thill Coupling—Charles A. Behlen, Cincinnati, O.  
 656,803—Running Gear for Wagons—Anton Boeker, St. Louis, Mo.  
 656,811—Thill Coupling—William G. Cline and W. R. Hardy, Galatin, Mo.  
 656,882—Charging-stand and Contact for Storage Batteries—George H. Condict, assignor to Electric Vehicle Co., New York, N. Y.  
 656,955—Thill Coupling—Richard Eccles, Auburn, N. Y.  
 656,962—Motor Vehicle—Charles D. P. Gibson, Jersey City, N. J.  
 656,641—Vehicle Brake—Ford T. Harrington, Bushnell, Ill.  
 656,720—End-gate Fastener—Henry Keller, Fort Wayne, Ind.  
 656,773—Tipping Wagon—Charles W. Lyon, Thornhill-Lees, near Dewsbury, England.  
 656,775—Vehicle Seat—Charles B. Moore, Rochester, Ind.  
 656,673—Vehicle Tongue Support—Oliver and C. Staton, Gadsden, Ind.  
 656,829—Coupling for Vehicles, Wagons, etc.—Benjamin K. Thomas, Alexandria, Neb.  
 656,865—Elastic Tire for Wheels—Alfred Tobler and H. Samuel, Paris, France.  
 657,046—Multiple-motor System for Automobiles—John Trier, Chicago, Ill., assignor, by mesne assignments, to D. Grant.  
 656,797—Vehicle Brake—Curtis Wigg, New York, N. Y.  
 657,381—Automobile—William O. Barnes, Stamford, Conn.  
 657,281—Vehicle Driving Mechanism—William Buttler, Redkey, Ind.  
 657,406—Fifth Wheel—Hiram C. Fouts, Emory, Tex.  
 657,112—Resiliency Device for Wheels—George Haves, Mount Vernon, N. Y.  
 657,220—Self-operating Wagon Brake—Edy Jenkins, Cullison, Kan.  
 657,124—Automobile Vehicle—Hosea W. Libbey, Boston, Mass.  
 657,430—Running Frame for Vehicles—Hiram P. Maxim, Hartford, Conn., assignor to Electric Vehicle Co., Jersey City, N. J., and New York, N. Y.  
 657,435—Felloe Plate—Charles Minshall, Terre Haute, Ind.  
 657,495—Tire—William H. Mitchell, Boston, assignor of one-half to D. H. Bradlee, Jr., Medford, Mass.  
 657,130—Vehicle Axle Lubricator—William A. Olmsted, Bala, Pa.  
 657,446—Thill or Pole Coupling—James C. Perkins, Inwood, Ia.  
 657,260—Self-propelled Vehicle—Henry Wilcke, Liverpool, England.  
 657,231—Fifth Wheel—Frank E. Wilcox, Mechanicsburg, Pa.  
 657,583—Machine for Manufacturing Clips for Wagons—James H. Baker, Allegheny, assignor to James H. Baker Manufacturing Co., Pittsburg, Pa.  
 657,516—Motor Vehicle—Clyde J. Coleman, Chicago, Ill., assignor by mesne assignments, to General Automobile Co. of New Jersey.  
 657,517—Making Vehicle Wheels—Henry F. Condon, De Kalb, Ill.  
 657,589—Whiffletree, Justin M. Conrad, Arlington, Neb.  
 657,649—Vehicle Air-brake—William J. Donaldson, Jr., La Grange, Tex.  
 657,650—Automobile Vehicle—Leonard H. Dyer, Washington, D. C., assignor of one-fourth to F. L. Dyer, Montclair, N. J.  
 657,531—Horse Detacher and Brake—Armstead M. Grant, Cherry Valley, Ark.  
 657,821—Chafing-roller for Wagons—Robert E. Hall, Mankato, Kan.  
 655,670—Motor Frame Attachment for Vehicles—Leonard E. Brookes, Chicago, Ill., assignor of one-half to S. M. Weir, Cleveland, O.  
 655,389—Safety Device for Electric Vehicles—Frank E. Case, Schenectady, N. Y., assignor to General Electric Co., of New York.  
 655,390—Brake for Vehicles—Marie E. P. Chaboche, Paris, France.  
 655,329—Motor Vehicle—James T. Dougine, Chicago, Ill.  
 655,654—Air-brake for Automobiles—Irving L. Hammond, Lewiston, Me.  
 655,247—Carriage—Jorgen Klovstad and G. W. Jonsen, Christiana, Norway.  
 655,563—Electric Carriage—Charles A. Lindstrom, assignor to Hewitt-Lindstrom Motor Co., Chicago, Ill.  
 655,256—Fifth Wheel for Vehicles—John G. McPherson, Philadelphia, Pa., assignor to MacPherson Automobile Co., of New Jersey.  
 655,572—Dumping Coal Wagon—Reuben A. McCauley, assignor of one-half to T. H. Blick, Baltimore, Md.  
 655,660—Steering Mechanism for Vehicles—Gustaf L. Reenstierna, Winchester, Mass.  
 655,518—Automatic Oiler for Vehicle Wheels—Van D. Roe, Maury City, Tenn.  
 655,286—Vehicle Tire—James E. Van Nest, Martinsville, N. J.  
 33,055—Design, Motor Vehicle-body—John H. MacAlman, Somerville, Mass., assignor to Locomobile Co. of America, New York, N. Y.  
 655,749—Power Mechanism for Automobile Vehicles—Edmund E. Allyn and L. R. Pomeroy, Cleveland, O.  
 655,679—Rest for Folding Vehicle Tops—William Y. Armstrong, Hutchinson, Kan.  
 655,947—Wagon Platform—Christian Arnold, Paterson, N. J.  
 655,948—Vehicle Wheel—Marion M. Bailey, Chillicothe, assignor of seventy-one one-hundredths to J. S. Harshman and H. E. Murphy, Springfield, O.  
 655,949—Vehicle Wheel—Marion M. Bailey, Chillicothe, assignor of seventy-one one-hundredths to J. S. Harshman, and H. E. Murphy, Springfield, O.  
 656,006—Carriage Body—Samuel R. Bailey, Amesbury, Mass.  
 650,087—Thill or Shaft for Vehicle—Charles R. Brown and A. R. Brown, Weatherby, Mo.  
 655,821—Running Gear for Sleighs—Horace J. Chandler, Dummer, N. H.  
 655,852—Electric Motor—Patrick J. Collins, assignor to Collins Electric Vehicle Co., Scranton, Pa.  
 655,853—Motor Vehicle—Patrick Collins, assignor to Collins Electric Vehicle Co., Scranton, Pa.  
 655,770—Buggy-top Raiser—John C. Ford, assignor to W. Winkler, Macon, Mo.  
 655,702—Automobile—Frederick G. Frankenberg, Chicago, Ill.  
 656,111—Wheel and Axle—Frank Hall, assignor of three-fourths to G. Elstrand, C. B. Shove and C. J. Hedwall, Minneapolis, Minn.  
 655,709—Vehicle Wheel—Frank M., J. S., and W. W. Hilton, and R. M. Merriman, Akron, O.  
 655,786—Vehicle—Giusto Lanino, Turin, Italy.  
 655,718—Apparatus for Swaging Axles—John Lanz, Pittsburg, Pa.  
 656,030—Trolley for Electrically-driven Vehicles—Louis Lombard-Gerin, Lyons, France.  
 655,936—Wagon-brake—Ernst F. Meyer, Waverly Park, N. J.  
 655,984—Hub—Charles C. Miffin, South Bend, Ind.  
 656,145—Thill Coupling—James C. Perry, New York, N. Y.  
 655,733—Vehicle Spoke—David C. Poynter, Mount Vernon, Ky.  
 656,045—Tire and Rim for Vehicle Wheels—William F. Rae, London, England.  
 656,047—Wagon-brake—Henry E. Rolph, St. Paul, Minn.  
 655,804—Thill Coupling—Daniel M. Sechler, Cincinnati, O.  
 655,835—Wagon—William O. Shadbolt, New York, N. Y.  
 655,836—Fifth Wheel—Norman C. Smith, Waterloo, Ia.  
 656,057—Wheel Holder—Peter S. Stephens, Washburn, Ill.  
 655,806—Buggy-top Attachment—Harris C. Stockton, Honey Grove, Tex.  
 655,807—Vehicle—Frank P. Stone, Chicago, Ill.  
 656,060—Means for Securing Resilient Tires to Wheels—Frederick J. Trench, Dublin, Ireland.  
 656,066—Vehicle Spindle—Milton Walker, La Harpe, Ill.  
 656,070—Vehicle Brake—Ruben H. White, Princeton, Ky.  
 656,074—Wagon-loading Device—Leonard C. Wood, Alden, Ia.  
 33,081—Design, Tool-carrier for Vehicles—George A. Macker, Westborough, Mass., assignor to Locomobile Co. of America, New York, N. Y.  
 33,091—Design, Carriage Pole Top—Joseph A. Sekora, Ann Arbor, Mich.  
 657,699—Wheel—Charles Heart, Frankton, assignor of one-half to W. H. H. Quick, Anderson, Ind.  
 657,871—Buggy Body and Seat Brace—Stephen J. Hester and J. I. Carter, Mayfield, Ky.  
 657,601—Mud or Dust Protector for Buggies—George H. Keeley, Milford, Ill.  
 657,787—Rubber Vehicle Tire—Raymond B. Price, assignor to Calumet Tire Rubber Co., Chicago, Ill.  
 657,832—Vehicle Tire—Raymond B. Price, Cambridge, Mass., assignor to Calumet Tire Rubber Co., of Illinois.  
 657,565—Wheel—Alexander C. Ramage, Leith, and G. Macmillan, Edinburgh, Scotland.  
 657,581—Fifth Wheel—John A. Spangler, Sell's Station, assignor of one-half to A. Hostetter, Hanover, Pa.  
 657,711—Motor-vehicle—Francis E. and F. O. Stanley, Newton, Mass., assignors to Stanley Automobile Co. of New York.  
 657,684—Cooling Apparatus for Motor Carriages—Ansbert E. Vorreiter, Aix-la-Chapelle, Germany.  
 657,845—Pneumatic-tired Wheel—John M. Wolbrecht, Los Angeles, Cal.  
 Copies of above patents may be obtained for 10 cents each by addressing John A. Saul, solicitor of patents, Fendall Building, Washington, D. C.  
 658,311—Unloader for Wagons—Woodson Barclay, Covell, Ill.  
 658,329—Vehicle Frame—Abraham Bath, New York, N. Y., assignor to Safety Three Wheel Vehicle Co., of New York.  
 658,233—Wheel—Peter C. Campbell, McCaskill, S. C.  
 658,238—Motor Vehicle—Clyde J. Coleman, assignor of fifty-one-hundredths to T. J. Ryan, Chicago, Ill.  
 658,004—Wheel—Bramah J. Diplock, London, England.  
 658,249—Motor Vehicle Wheel—Caleb G. Ensign, Madison, O.  
 658,068—Motor Vehicle—Henry J. Lawson, London, England.  
 657,946—Tail-gate for Wagons—Jesse M. Lillpop, Kyana, Ind.  
 658,117—Automatic Maximum Speed Governor for Electrically-propelled Vehicles—Horace F. Parshall, London, England.  
 658,285—Spring Vehicle—August Schubert, assignor to Schubert Bros. Gear Co., Oneida, N. Y.  
 658,162—Folding Device for Buggy Tops—Lacota L. Short, Russellville, Mo.  
 658,046—Motor Vehicle—Calvin T. Shoup, Parsons, Kan.  
 657,997—Wagon-reach Clamp—Wm. H. Weber, Chicago, Ill.



- 658,308—Running-gear for Vehicles—George M. Wood, Decatur, Ill.
- 33,223—Design, Antirattler—Fenton E. Judson, Antigo, Wis.
- 33,227—Design, Wearing-plate for Wagon Reaches—Edward Quirk, Fulton, N. Y.
- 658,479—Wheel Tire Remover—Bradford M. Buckland, Poplar, Cal.
- 658,338—Vehicle Wheel—Joseph N. Byers, Urbana, O.
- 658,619—Tire-supporting Frame—George L. Clark, Warren, Pa.
- 658,620—Driving Apparatus for Motor Vehicles—Louis S. Clarke, Pittsburg, and J. G. Heaslet, Allegheny, assignors to Autocar Company, Pittsburg, Pa.
- 658,361—Fifth Wheel—Walter S. Frazier, Jr., assignor to W. S. Frazier & Co., Aurora, Ill.
- 658,712—Device for Equipping Wheels with Rubber Tires—Arthur W. Grant, Springfield, O., assignor, by mesne assignments, to Consolidated Rubber Tire Co., Jersey City, N. J.
- 658,442—Mud-guard for Vehicles—Dexter Hitchcock, Norwalk, Conn.
- 658,500—Wear-adjusting Nut for Vehicle Axles—Wm. H. Holliday, Oakdale, Cal.
- 658,487—Vehicle Wheel Rim—Alexander W. Kent, Boston, Mass.
- 658,461—Vehicle Tire—Ransom E. Olds, Lansing, Mich.
- 658,580—Dumping Wagon—Charles S. Pharis, Syracuse, N. Y.
- 658,397—Thill-coupling—Oscar H. Platt, Chico, Cal.
- 658,675—Nut-lock for Vehicle Wheels—Eugene W. Reed, assignor of one-half to L. D. Steward, Grand Rapids, Mich.
- 658,410—Vehicle Axle Nut—George W. Terry, assignor of one-half to I. E. Terry, Pontiac, Mich.
- 658,689—Vehicle Brake—Maurice Vidie, Paris, France.
- 658,496—Wagon or truck gear, Glenn T. Willis, assignor to J. Porteous, Fresno, Cal.
- 33,249—Design, Lug for Vehicle Tires—Eleazer Kempshall, Newton, Mass., assignor by mesne assignments, to Rubber Tire Co., of America, New York, N. Y.
- 659,121—Appliance for Automobiles—Edward W. Ayres, Washington, D. C.
- 659,012—Automobile—Otto V. Bachele, Chicago, Ill.
- 658,937—Dumping Wagon—Frederick Bauer and D. Genre, Wilmerding, Pa.
- 659,136—Vehicle Brake—James David, Butler Springs, Ala.
- 658,762—Thill Coupling—John G. J. Davis, assignor of one-half to J. H. Day, Augusta, Ga.
- 658,834—Vehicle—Clarke S. & H. F. Drake, Milwaukee, Wis.
- 659,078—Motor Vehicle—Charles A. Lieb, New York, N. Y.
- 658,920—Wheel—Hyman Lieberthal, Chicago, Ill.
- 659,080—Supporting-frame for Motors of Electric Carriages—Charles A. Lindstrom, assignor to Hewitt-Lindstrom Motor Co., Chicago, Ill.
- 659,174—Garbage-wagon—David Lippy and H. D. B. Williams, assignors of one-half to J. J. King and W. W. Stark, Mansfield, O.
- 658,859—Thill Coupling—Theodore Near, New York, N. Y.
- 658,799—Automatic Vehicle Brake—Henry Paden, East Grand Forks, Minn.
- 659,099—Thill Coupling—Winston K. Pendleton, assignor of two-thirds to W. P. Blakely and W. S. Jones, Ocoee, Fla.
- 658,960—Advertising Motor Vehicle—Arthur F. Randall, assignor to H. M. White, Boston, Mass.
- 658,804—Thill Coupling—Charles H. Rastede, Cedar Rapids, Ia.
- 658,808—Motor-Wheel for Automobiles—Herbert Simmons, Wellston, Ohio.
- 662,183—Boot for Carriages—Edward R. Briggs, Amesbury, Mass.
- 662,219—Whip Socket—Oscar Carter, Buena Vista, Ind., assignor of one-half to G. W. Cathcart, Myrtle, Miss.
- 661,952—Thill Coupling—Walter S. Castle, Leesbury, Va.
- 662,372—Motor Vehicle—Thomas B. Dooley, Malden, Mass., assignor to E. D. Wiggins, trustee.
- 661,964—Driving Gear for Motor Vehicles—Robert W. Elston, Charlevoix, Mich.
- 661,965—Non-Slipping Rubber Tire—Kanute A. Enlind, Naugatuck, Conn.
- 662,267—Vehicle—Jacob A. Hamelback, Zanesville, Ohio.
- 662,124—Leaf-Spring for Carriages—David N. Kratzer, Mount Oreb, Ohio.
- 662,362—Tongue Tip—Amund A. Lerbakken, Carlisle, Minn.
- 662,007—Starting Mechanism for Automobiles—John G. MacPherson, assignor to MacPherson Automobile Company, Philadelphia, Pa.
- 662,008—Tire for Vehicles—Wm. F. Masters, New York, N. Y.
- 662,298—Motor-Vehicle Frame—Frank R. Parker, Penacook, N. H.
- 662,200—Thill Coupling—John C. Parsons, Columbus, Ohio.
- 662,026—Power Device for Road Vehicles—Robert B. Robertson, Topeka, Kan.
- 662,030—Automobile—Douglas L. Sauerhering, Wausaw, Wis.
- 662,206—Motor Vehicle—John E. Thornycroft, London, England.
- 662,207—Driving Mechanism for Motor Vehicles—John E. Thornycroft, London, England.
- 662,177—Elastic Tire for Vehicles—Henry Tolman, Newton, Mass.
- 662,138—Motor Vehicle—Herbert G. Underwood, New York, N. Y., assignor to International Power Vehicle Company, of West Virginia.
- 662,050—Thill Coupling—Alfred H. Worrest, Lancaster, Pa., assignor to Metal Stamping Company, New York, N. Y.
- 662,332—Tire—Wm. A. Wright, Atlanta, Ga.
- 33,600—Design, Wagon Body—Patrick J. Reid, Chicago, Ill.
- 662,686—Rubber Tire Setter—Samuel W. Collins, Indianapolis, Ind., assignor by mesne assignments, to Consolidated Rubber Tire Company, Jersey City, N. J.
- 662,777—Vehicle Axle—John L. Dolson, Charlotte, Michigan.
- 662,400—Gearing for Automobile Vehicles—Leonard H. Dyer, Washington, D. C., assignor of one-fourth to F. L. Dyer, Montclair, N. J.
- 662,401—Gearing for Automobile Vehicles—Leonard H. Dyer, Washington, D. C., assignor of one-fourth to F. L. Dyer, Montclair, N. J.
- 662,640—Rubber Tire Setter—Arthur W. Grant, Springfield, Ohio, assignor, by mesne assignments, to Consolidated Rubber Tire Company, Jersey City, N. J.
- 662,641—Device for Equipping Vehicle Wheels with Rubber Tires—Arthur W. Grant, Springfield, Mass., assignor, by mesne assignments, to Consolidated Rubber Tire Company, Jersey City, N. J.
- 662,642—Device for Equipping Vehicle Wheels with Rubber Tires—Arthur W. Grant, Springfield, Mass., assignor, by mesne assignments to Consolidated Rubber Tire Company, Jersey City, N. J.
- 662,721—Wheel Hub—Charles Heart, Frankton, Ind.
- 662,443—Vehicle Wheel—James N. Johnson, assignor of one-fourth to J. F. Bennett, Hattiesburg, Miss.
- 662,649—Rubber Tire Setter—Alvaro S. Krotz, Springfield, Ohio, assignor to Consolidated Rubber Tire Company, New York, N. Y.
- 662,650—Rubber Tire Setter, Alvaro S. Krotz, Springfield, Ohio, assignor to Consolidated Rubber Tire Company, New York, N. Y.
- 662,651—Rubber Tire Setter—Alvaro S. Krotz, Springfield, Ohio, assignor to Consolidated Rubber Tire Company, New York, N. Y.
- 662,455—Speed Controlling Mechanism—Stephen Messerer, Newark, N. Y., assignor to Messerer Automobile Company, of New Jersey.
- 662,800—Wagon-bed Hoist—Abraham Moyer, Antlers, Ind. Ter.
- 662,876—Spring for Vehicles—Wm. Parfrey, New York, N. Y.
- 662,475—Steering and Brake Device for Automobile Carriages—Arthur Strickland, Hamilton, Canada.
- 33,616—Design, Vehicle Tire Channel Rim—John G. Webb, Springfield, Ohio.
- 662,902—Motor Vehicle—Horace L. Arnold, assignor to J. A. Hill, New York, N. Y.
- 663,254—Thill Coupling—Thomas E. Brooks, assignor of one-half to S. Nagy, Chicago, Ill.
- 663,384—Antirattler for Thill Couplings—Porter C. Hayes,burghill, assignor of one-half to C. H. Drury and G. C. Bushnell, Hartford, Ohio.
- 663,280—Making Wheels—John T. Kelley, assignor of one-half to S. R. Rawson, New London, Ohio.
- 663,175—Wheel and Tire—Thomas J. Ketcham, Matamoras, Pa.
- 663,233—Connection of Strikers to Motor-Vehicles for Mechanically Operating Electric Switches—Wm. Kingsland, London, England.
- 663,350—Steering Apparatus for Vehicles—Emil Lundquist, assignor of one-half to S. Bergmann, Berlin, Germany.
- 662,972—Thill Coupling—Daniel E. Russell, Dunbarton, Wis.
- 663,047—Elastic Hub and Axle—Frank Schmitz, Chicago, Ill.
- 663,104—India-Rubber Tire for Vehicles—Hans C. P. Siversleth, Copenhagen, Denmark.
- 663,302—Vehicle Hub—Fernando F. Stowe, Worcester, Mass.
- 33,646—Design, Yoke for Automobile Steering Gear—Walter C. Baker, assignor to American Ball Bearing Company, Cleveland, Ohio.
- 33,647—Design, Vehicle Tire—Thomas Beach, Freeport, Pa.
- 33,644—Design, Brace Bar for Carriage Bodies—Jeremiah P. Johnson, Detroit, Michigan.
- 33,650—Design, Axle-frame for Motor Vehicles—Wm. H. Smith, Buffalo, assignor to J. R. Keim, New York, N. Y.
- 663,487—Thill Coupling—James W. Brooks, assignor of one-half to J. Benton, Indianapolis, Ind.
- 663,729—Sparkign Igniter for Explosive Engines—Louis S. Clarke and J. G. Heaslet, Ardmore, assignor to Autocar Co., Ardmore and Pittsburg, Pa.
- 663,828—Steam Boiler Feeder—James F. Duryea, Springfield, Mass., assignor to United Power Vehicle Company, New York, N. Y.
- 663,829—Throttle Valve for Steam Engines—James F. Duryea, Springfield, Mass., assignor to United Power Vehicle Co., New York, N. Y.
- 663,757—Power Transmitter—Max E. Hertel, Greenfield, Mass., assignor to Oakman Motor Vehicle Co., Chicago, Ill.
- 663,636—Carriage Coupling—Charles T. McCue, assignor to Premier Manufacturing Co., Hartford, Conn.
- 663,702—Spring Frame for Vehicles—Frank R. Parker, Penacook, N. H.
- 663,703—Spring Frame for Automobiles—Frank R. Parker, Penacook, N. H.
- 663,836—Running Gear for Vehicles—Francis E. and F. O. Stanley, Newton, Mass., assignors, by mesne assignments, to Stanley Automobile Co., New York, N. Y.
- 663,709—Thill Coupling—Gunder Torkelson, assignor of one-half to F. N. Ryan, St. Paul, Minn.
- 33,688—Design, End-gate Extension—Henry L. and E. C. Litchfield, Webster City, Ia.
- 659,160—Wagon-body—Walter G. Stewart, Reading, Pa.
- 658,879—Wheel for Vehicles—Samuel Sweeney, Los Angeles, Cal.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.



**Trade News.**

BY UNCLE SAM.

**ALABAMA.**

**BIRMINGHAM**—The Birmingham Buggy Company, of which Mr. P. B. Matthews is the genial manager, although one of the young industries of Birmingham, it is a lusty one, and its history is one of success. The plant of the company, at the corner of Second avenue and Seventeenth street, is a two-story structure, 75x140 feet and well adapted to the business. It is equipped with a cold tire shrinking machine, a Johnson fender stitching machine, a rubber tire plant, and all labor-saving devices. The great specialty of the company is the manufacture of fine buggies, traps, fancy delivery wagons, etc. Specially adapted to this section. These vehicles are made from the beginning, in the shops of the company.

**CALIFORNIA.**

**FRESNO**—M. Vincent has opened a carriage establishment in this city.

**OAKLAND**—Councilman Schaffer has introduced a resolution taxing all classes of vehicles as a means of increasing the revenue of the city. Among them were the following: Heavy trucks, \$12 per annum; carriages, etc., for hire, \$10; automobiles, \$7; delivery and garbage wagons, \$5; two-horse carriages, private, \$2; one-horse vehicle, \$2; bicycles, \$1. The resolution was referred to the Committee on Ordinance and Judiciary.

**CONNECTICUT.**

**BRISTOL**—W. E. Giddings, of Watson Giddings & Son, will retire from the carriage-making business, with which he has been identified for a life-time. Fred Giddings will be in full charge of the business after May 1.

**EAST HAMPTON**—Bevin Bros. Co. are erecting a building to be used as a repository just south of their factory.

**MANCHESTER**—George H. Allen's increasing carriage business has made it necessary for him to secure two more floors for display room in his carriage repository.

**FLORIDA.**

**JACKSONVILLE**—The Vail Carriage Works were among the plants destroyed by the great fire in Jacksonville; loss, \$20,000.

**ILLINOIS.**

**CHICAGO**—Latimer Tire and Rubber Manufacturing Company; capital stock, \$25,000; incorporators, Edward J. Newburger, L. M. Ritterband and M. D. Evers.

**QUINCY**—Work has commenced on the new building of the Koenig & Luhr's Wagon Company on Sixth avenue. The building will have a frontage of 65 feet, and will be 100 feet in depth. It will be four stories high, and will cost \$15,000. It is to be completed by August 15.

**INDIANA.**

**ELKHART**—The Buescher Manufacturing Co., manufacturers of dash rails, pole and shaft tips, etc., have purchased a new site and will greatly increase their facilities. This change has been made necessary by the rapid increase in their business.

**SHELBYVILLE**—James Morrison has concluded a contract for the construction of a brick building on West Jackson street that will be thirty by sixty feet. This building he will use for a buggy and carriage repository. Mr. Morrison is proposing to bring to Shelbyville the finest line of vehicles ever handled in this city or county. They will comprise all the latest designs in vehicle architecture.

**TERRE HAUTE**—Many improvements in the Standard Wheel Company's local plant will be made this year if the city council grants the petition for laying tracks for an additional switch near its property. A two-story brick building, 50 x 75 feet, is to be erected on the vacant spot at the southwest corner of the company's property. The lot at the southeast corner of Thirteenth and Plum streets has been purchased for a factory office building, and additional machinery will be placed in the large room in one of the main buildings occupied at present by an office. The proposed addition will probably be completed this summer, as several thousand dollars' worth of machinery has been ordered. The company expects to add a department for setting tires on farm wagons and heavy truck wheels. The two-story frame building on Thirteenth street will be torn down within a year or two, to be replaced by a two-story brick structure. The Terre Haute plant employs 200 men and has a pay roll of nearly \$9,000 a month.

**KENTUCKY.**

**CAMPBELLSVILLE**—George Miller has opened up a carriage painting establishment in this town.

**LOUISVILLE**—The annual meeting of stockholders of the Kentucky Wagon Manufacturing Company was held May 1st for the purpose of electing officers and directors. The old officers and the same board of directors were elected, as follows: W. C. Nones, president; John H. Ward, vice-president; James W. Kennedy, general manager; Thomas Malone, treasurer; S. M. Nones, secretary. Directors: John Stites, John H. Ward, John Marshall,

James P. Helm, Steven Shallcross, A. L. Schmidt, James W. Kennedy, W. C. Nones and John C. Hughes.

**LOUISIANA.**

**CHURCHPOINT**—The Churchpoint Manufacturing Company held a meeting on March 27, 1901. The following officers were elected: H. Barousse, president; T. Guidry, vice-president; L. Broussard, secretary; H. J. David, treasurer. With the officers the following constitute the board of directors: Edm Deville, J. D. Murrel, George Jagneaux. The object of the company, as stated in the charter, will be to manufacture wagons, farm implements and do general repair work. The company is organized with a capital of \$10,000, of which \$5,000 has already been subscribed.

**MAINE.**

**AUGUSTA**—E. E. Marson, the carriage manufacturer, has opened the season with sales of high grade carriages, among them being a Stanhope bicycle carriage, made by an Amesbury, Mass., builder. Mr. Marson says this is the finest one ever shipped to Augusta.

**BANGOR**—Andrew Kelley has completed at his carriage factory at Main and Rowe streets two handsome delivery wagons for the Bangor branch of the National Biscuit Co., which are attracting much attention.

**HARMON**—Mr. E. Bell has opened a carriage paint shop at this place.

**MARYLAND.**

**HAGERSTOWN**—William H. Albaugh, formerly with the Hess Manufacturing Co., has rented of Louis and Emma Rose the brick building now in course of erection on the rear end of the Rose lot, North Potomac street, and will conduct a buggy and carriage business. The main building is two stories high, 30 by 40 feet, and in the rear a smaller building, covered with corrugated iron, will be erected and used as a finishing room. Mr. Albaugh will purchase carriages and buggies in an unfinished state. These will be painted and trimmed in the buildings.

**MASSACHUSETTS.**

**FALMOUTH**—Lewellyn R. Hewins, carriage maker, is a bankruptcy petitioner. He owes \$3,121.73, of which sum \$1,600 is secured to three creditors by mortgage on land in Falmouth. He has assets of \$1,750, consisting of real estate.

**KITTERY**—The Bunker Hill Carriage Co., organized at Kittery, to make vehicles of all kinds, with a capital stock of \$30,000, of which nothing is paid in. The president is Myron D. Cressy, of Malden, Mass., and the treasurer Frank A. Teeling, of Boston.

**NEW WORCESTER**—J. A. Rhodes, who has organized the J. A. Rhodes Carriage Co., will erect a large factory for the manufacture of carriages. Plans are now being drawn. The location of the new plant will be at 1090 Main street. It will have a front of 150 feet and a depth of 125 feet. The company is doing work at a factory at 1090 Main street, but that is not large enough. Mr. Rhodes was employed at the H. J. Russell carriage works on Exchange street up to about a month ago.

**PLAISTOW**—Moses Dow will soon close out his carriage business, as he has leased the present factory to the Warner Carriage Co.

**WOODVILLE**—L. E. Coolidge reports business rushing. He has now forty-two hands employed.

**WORCESTER**—Fernando F. Stowe has invented what he calls a "steel cushioned hub," and has organized a company to manufacture it in Worcester. The company is the Steel Cushioned Hub Co., a Maine corporation, with a capital stock of \$300,000. Mr. Stowe is president, Henry K. Merrifield treasurer. These men, with Judge William T. Forbes, make up the board of directors. The hub is planned to do away with jolts and jars in driving over rough places in the road. A thorough test, which was most satisfactory to the members of the company, was given this week, when the hubs were tried on one of J. B. Shea's truck teams.

**MICHIGAN.**

**BAY CITY**—The Bay City Omnibus Co. will soon erect an addition to the present building it occupies. The business of the company is growing rapidly, and more room is needed. The addition will be 50x100 feet in size, two stories high, of brick, and will adjoin the present building on the south. It will be fitted up in modern style for the business, with a power elevator and other conveniences. The cost of the addition will be \$5,000.

**BENTON HARBOR**—The Gillette Roller Bearing Co. is being organized here, to manufacture wagons with roller bearings, and will employ 100 men. The Peters Lumber Co. is furnishing the capital.

**COLDWATER**—S. B. Stout purchased the carriage and harness repository of Frank N. Williams, at 21 South Monroe street, and took possession May 1. He will continue the business at the same place with a full line of carriages, harness, whips, etc.

**GRAND RAPIDS**—The Collin-Becker Carriage Co., of Jackson, has transferred its business to the Granger-Hayden Carriage Co., which was recently reorganized for the purpose of manufacturing buggies, carriages and cutters. This new company is officered as follows: President and manager, B. F. Granger; secretary, William A. Hayden; treasurer, Henry Hayden. The company has a capital of \$50,000, all paid in.



**KALAMAZOO**—The Howard Elastic Wheel Co. is the name of one of Kalamazoo's new manufacturing concerns. It is located in the Hodgman building at 215 North Rose street. The company will manufacture the Howard elastic steel vehicle wheel, which they claim is surpassed by nothing on the market in strength, elasticity, durability and neatness. The wheel is built with a curved fork spring steel spoke with one solid piece at the outer end or felly, then forking or curving gradually to the hub, which forms the double spring spoke. The company is composed of the following well-known business men: E. V. Parsons, president, St. Charles, Mich.; Otis Baker, vice-president, Kalamazoo; W. R. Wilson, secretary and treasurer, Kalamazoo. The board of directors are H. G. M. Howard, John K. Baker, E. V. Parsons, Otis Baker and W. R. Wilson.

**MARSHALL**—The partnership heretofore existing between George A. Bullard and Milton M. Searles, under the name of the Bullard-Searles Carriage Co., has been dissolved by mutual consent. The business will be continued by G. A. Bullard.

## MINNESOTA.

**DULUTH**—A factory for the Duluth Carriage Works is to be erected on East First street. It will be two stories high above the basement, and will cost about \$4,000.

**ST. PAUL**—Judge Bunn has decided the suit of the Michigan Buggy Co. against Hellen Brothers, of Minneapolis, and Charles F. Meyers. The court grants the plaintiff judgment for \$100, the price of a certain Stanhope buggy. Meyers took the buggy, giving three notes, the title to the buggy to remain in the plaintiff company until the notes were paid. He turned the buggy over to Hellen Brothers, and they refused to produce it when demanded by an officer, and it could not be found.

## MISSOURI.

**ST. LOUIS**—H. Bollwerk, Jr., & Bro. have discontinued their branch shop, known as 715 Park avenue, and are now permanently and only located at 3105 South Broadway, where they have ample facilities for handling anything in the line of wagons and buggies, and also carry in stock top wagons of a new design for grocers, butchers and bakers, also new style rubber-tired storm buggies for doctors and drummers.

## MISSISSIPPI.

**LAUREL**—On April 9 a charter was granted to the Lindsey Wagon Co., Laurel, Jones County; capital, \$50,000. Incorporators: S. W. and John Lindsey, J. E. Parker, F. W. Pettibone and W. F. Rumble.

## NEW JERSEY.

**BRIDGETON**—Loudenslager & Harker, the well-known carriage builder and blacksmiths, will soon move their entire business further up North Laurel street, vacating the property on the Shoemaker estate, which they have so long occupied. The new plant is much more modern than the one occupied at present, and will give the firm added opportunities to conduct business in the future. Benjamin F. Maull, the carriage trimmer and painter, will take his business with the firm to the new location.

**HOBOKEN**—A two story brick building now adorns the site of the ruins of Wilson's wagon works, Palisade avenue and Bowers street, destroyed by fire a few months ago. The business of building wagons will be renewed by Mr. Wilson about May 1.

## NORTH CAROLINA.

**CARY**—The Harrison Wagon Co. begun business in 1894 with very small capital, with a trade entirely local, and with a trade entire local it has, by well directed energy and genuine merit grown until now it has a large plant and business, with a trade which has extended as far as New York, Ohio, Florida and Texas. In order to still further extend and increase the business, the company has recently been incorporated with ample capitalization. Mr. R. J. Harrison was made president, Mr. F. R. Gray vice-president, and Mr. G. F. Goodwin secretary and treasurer.

**HENDERSON**—The buildings situated on the Seaboard Air Line, known as Pogue's factory and Hunter's Hall, have been transformed into carriage works by the Corbitt Manufacturing Co. Large additions have been made, machinery and stock received and operations are to be commenced about the middle of May.

**RALEIGH**—Mr. J. Elwood Cox has sold out his spoke and handle plant. Mr. Cox will move his machinery to Greensboro.

## OHIO.

**AKRON**—This city, which is now the home of ten big rubber factories, will add one more to its number, the largest soft rubber manufacturing plant in the world. The American Dunlop Co., one of the pioneers in the rubber manufacturing business, is preparing to erect three new plants, one in Canada, one in Australia and one in this city. It is to be located south of the city, and will employ not less than 2,000 men at the outset. It will make bicycle, carriage and automobile tires and all classes of soft rubber goods.

**MARIETTA**—The stockholders of the Ohio Valley Wagon Co. met, Saturday, to hold their annual election of directors, and to hear the annual reports of the officers. The latter showed the company in good condition and prospering in a way to make the stockholders happy. The following directors were elected: J. A. McCormick, William Reader, W. M. Stillwell, I. O. Alcorn and John Kaiser. The directors then organized by electing the fol-

lowing officers: William Reader, president; J. A. McCormick, vice-president; W. M. Stillwell, secretary, treasurer and superintendent.

**SANDUSKY**—The Smith Bending factory, for a long time operating at Monroeville, has removed to this city, and ground has been broken for the erection of a building for the company. The new factory is to be located on First street, adjoining the Woolsey Wheel Works, and will be two stories high. The dimensions of the new building will be 48 by 48 feet. A new saw mill will also be constructed, and will measure 22 by 50 feet. The new factory, which was located here largely through the efforts of Henry Graefe, manufactures wheel felloes, and will give employment to fifteen or twenty men at the start. The plant will be run in connection with the Woolsey Wheel Co., which will furnish the power.

**TOLEDO**—The Central Carriage Co., of this city, has just completed, and will in a few days ship to Kokomo, Ind., to the Sice & Dixon Educated Animal Show, twenty fancy wagons, for use of that troupe. Although the idea of the regular circus wagon is carried out in these wagons, they are built so that they can be drawn by ponies.

## PENNSYLVANIA.

**EAST COLUMBIA**—J. B. Hutchinson, who for the last few years has been traveling salesman for the Keystone Wagon Co., of Reading, Pa., has severed his connection with that firm to take a similar position with Barnum & Reed, of Lime Rock, Conn., manufacturers of the McGovern cold tire setter.

**LANCASTER**—Henry Nolly's carriage factory, a three-story brick building, and the stables of the Kindig House, were destroyed by fire May 6. The loss on the stables is \$5,000 and on the carriage works \$8,000, partially covered by insurance.

**PITTSBURG**—H. Thesen, of the Thesen Manufacturing Co., Cape Town, South Africa, is here to buy wood-working machinery for his wagon factory at home. He is a native of Norway; but has been in Cape Colony for some years with two brothers. When seen at The Seventh Avenue he said America could manufacture and pay the freight on wagons and then undersell them with their present way of manufacturing. "We have got to get wood-working machinery or give up the business, that is all there is to it," said he. Mr. Thesen has been in the country ten days.

H. Lange Wagon Co., Pittsburg, chartered April 26. Capital, \$50,000.

**PLUMSTEADVILLE**—Aaron Kratz, Bucks County's famous wagon and carriage builder, held his annual carriage sale on April 19, at his manufactory in Plumsteadville. Farmers for miles around suspended operations in order to attend the sale and partake of the "good old-time free dinner," which Mr. Kratz always serves on such occasions. Mr. Kratz sacrificed many of his fine falling-top carriages, but was very much pleased with the sale. His best make of buggies, fitted with solid rubber tire, sold from \$101 to \$125 each. The same build of buggy, with steel tire, sold from \$67 to \$81. Factory buggies sold as high as \$48. Two-seated surreys sold as high as \$70. Spindle wagons sold as high as \$33. Milk wagons brought from \$30 to \$45. A great many light market wagons and second-hand carriages brought good prices.

**READING**—F. J. Hartranft started a carriage and wagon works at 722-24 Mulberry. He erected a new factory, 26 by 30 feet.

The firm of Himmelberger & Smith, carriage and wagon builder, located in West Reading, has been dissolved by the retirement of George H. Smith. F. R. Himmelberger assumes the entire business, and will continue it as before. He is building a factory on the corner of Second and Cherry streets, West Reading. It will be one of the largest buildings in West Reading. It will be 40 by 100 feet and three stories high. When finished it will be a model plant, supplied with all the latest improved machinery. The foundation walls are nearly completed and the bricklayers will begin work in a few days. It is expected to occupy the building by July.

G. H. Smith, who has just retired from the firm of Himmelberger & Smith, builders of carriages and wagons, will erect a handsome new factory at Third and Walnut streets, where he has secured a desirable site. He will erect a three-story brick factory, 30 by 70 feet in dimensions, which will be equipped as a model plant in every way. The wareroom will be finished in hard wood.

## RHODE ISLAND.

**WESTERLY**—The Stillman Carriage Co. is having an addition built on one of the firm's repositories on Cogswell street.

## TENNESSEE.

**SPARTA**—J. R. Tubb, who sold his roller mill, will probably form a stock company capitalized at \$50,000 to manufacture wagons at once. He is already running a large spoke factory. There is here any amount of the finest wagon timber to be found anywhere. The plan is meeting with much encouragement, and its success is assured.

## TEXAS.

**DALLAS**—Lightning struck the new six-story block owned by the Southern Rock Island Plow Co. The building was rated a fire-proof warehouse structure, but in less than an hour it was a total loss. It was filled with wagons, buggies and agricultural ma-



chinery. The value of the stock is estimated at from \$300,000 to \$400,000, and the building at approximately \$100,000. The insurance is unofficially estimated at a quarter of a million dollars.

PARIS—The Carriage Works of W. E. Hogue were destroyed by fire May 1. Loss, \$4,000; insurance, \$1,000.

SAN ANTONIO—Mr. J. P. Lovelady, of the firm of Lovelady, Rogers & Co., has returned from a two weeks' visit to the buggy centres of the East, where he has purchased a large stock of the best goods in the market preparatory to opening their handsome buggy and carriage repository, which will be located at 214 and 216 South Side Main Plaza. Mr. Lovelady has selected as fine a lot of vehicles as was ever shown in San Antonio. Extensive alterations and improvements of the premises are being made and in a few weeks the firm will be ready for business. The members of the firm are well known here and will secure without doubt a liberal share of patronage.

#### VERMONT.

HEINSBURG—E. L. Degree has sold out his interest in the carriage building firm of Degree & Martin, and will go to the Adirondacks for his health.

MONTPELIER—A. J. Sibley has opened wagon ware rooms in the Ellis block. He will sell the Baily pneumatic wagon, which is considered one of the best in the country. He will also put in a line of harnesses, blankets and horse goods.

W. H. Carroll & Co. have leased for the summer rooms and are putting in a stock of carriages, bicycles, harnesses, wheelbarrows, etc. The new company propose to have a modern wagon repository, and will have on exhibition several of the leading manufacturers' makes.

#### WASHINGTON.

WASHINGTON—Buchanan & McLellan, manufacturers of wagons and carriages at 1120 Western avenue, are adding new machinery to their plant, and otherwise increasing its efficiency.

#### WISCONSIN.

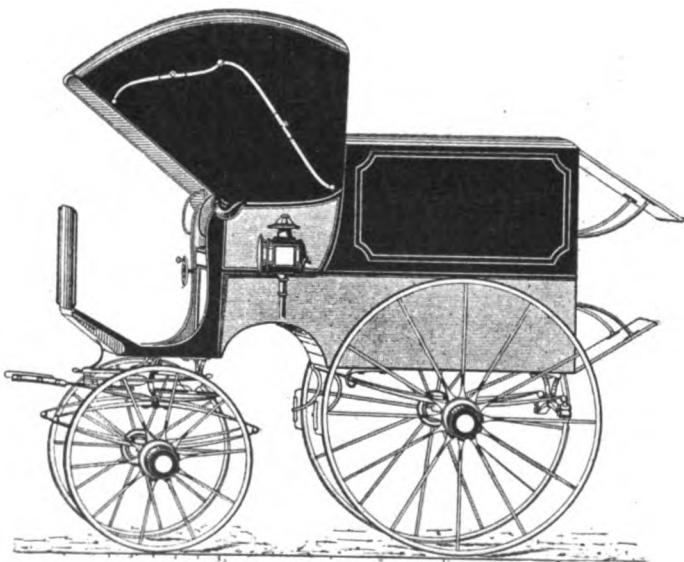
GREEN BAY—W. A. McDonald will occupy the store room at 123 North Broadway as an office and carriage repository. The interior walls of the building are being calcimined preparatory to Mr. McDonald's occupancy. The store at the above number will be used for fine carriages only, heavier vehicles being shown at McDonald's old place of business. The store will be ready for occupancy the latter part of this week.

#### DANISH SUBSTITUTE FOR RUBBER.

CONSUL FREEMAN sends the following from Copenhagen, April 25, 1901: "This office is deluged with letters from American manufacturers in regard to a report emanating from Bergen, Norway, to the effect that a chemist of Copenhagen has discovered a process for manufacturing out of asphalt a material called 'solicum,' which serves as a substitute for rubber. No process has been patented or discovered in Denmark for manufacturing such a material out of asphalt. A chemist named C. A. R. Steenstrup has recently patented a process for making solicum from old rubber and oil. Its efficiency as a substitute for genuine rubber has yet to be demonstrated."

#### VOITURE DE VOYAGER.

(From *Le Guide du Carrossier*.)



This illustration shows a vehicle designed for a traveling lunch wagon to accompany travelers and excursion parties, following closely as it does the modern T cart in form, with the addition of a box over the rear end.

## Wants.

Help and situations wanted advertisements, one cent a word; all other advertisements in this department, 5 cents a word. Initials and figures count as words. Minimum price, 30 cents for each advertisement.

#### SITUATIONS WANTED.

As foreman of paint shop in carriage factory. Have had over 30 years' experience at my trade; know all its branches. Thoroughly posted on mixing colors, and on all other materials used in the business. Have had full charge of shop for over 20 years; ran one large shop over 15 years. Best of references. Competent in handling men. Address "X. Y. Z.," care THE HUB.

Position wanted by a first-class carriage designer and practical constructor, who is also mechanical draftsman, having had several years' experience on machinery on motor carriages. I am a practical mechanic and artistic designer, and have had several years' experience with some first-class carriage builders. Am familiar with both light and heavy work. A position with a large firm preferred, where the services of a first-class man would be appreciated. Address, "BOX 61," care of THE HUB.

#### HELP WANTED.

Wanted—First-class carriage draftsmen. GRAND RAPIDS ENGRAVING CO., Grand Rapids, Mich.

We need the services of several first-class men calling on the carriage trade and automobile builders, to introduce our line of wire wheels, axles, tubular automobile running gears and carriage parts. Address "N.," Box 66, care THE HUB.

Wanted—To open negotiations with competent men to take charge of painting, trimming and wood departments in factory building; 3,500 medium grade jobs. Address "W. H. M.," care THE HUB.

Wanted—A first-class varnisher. Steady work guaranteed the year round. Address, GOULD'S CARRIAGE FACTORY, Scranton, Pa.

Wanted—To come South, two first-class body makers, two blacksmiths and two trimmers. Address, "SOUTH," care THE HUB.

Wanted—To correspond with a first-class carriage draftsman who has also some practical knowledge of the carriage business. To the right man there is an attractive opening. DURANT-DORT CARRIAGE CO., Flint, Mich.

We would like several traveling men who make it their particular duty to see the carriage dealers, to carry our goods as a side line. Easy sellers and they are the best on the market. One or two men who cover the eastern and central States thoroughly, and who see their trade frequently, could do exceptionally well. Write for full particulars to "MANUFACTURER," Box, 65, care THE HUB.

Wanted—Hustlers to secure new subscribers for THE HUB. A good chance to make money easily. Subscription price, \$2.00 a year. Liberal commission paid. Address Subscription Department, THE HUB, 24-26 Murray street, New York.

#### PATENTS.

PATENTS—H. W. T. Jenner, patent attorney and mechanical expert, 608 F street, Washington, D. C. Established 1883. I make an examination free of charge, and report if a patent can be had and exactly how much it will cost. Send for circular.

#### FOR SALE.

Factories, mill sites, water powers, timber lands. ALFRED ELA, Boston.

Solid rubber tire patent. Entirely new principle. Cannot get off the rim. Economical. Experienced tire men say it is the best they have ever seen. For particulars, address "RUBBER TIRE," care of THE HUB.

#### BUSINESS OPPORTUNITIES.

I own controlling interest in a shaft coupler and anti-rattler that has been on the market for five years, and which is now being used successfully and in large quantities by many of the leading carriage builders. Other duties are commanding my attention and I would be willing to dispose of my interest for a reasonable figure. A splendid opportunity to buy an established business. Address, "SHAFT COUPLER," care THE HUB.



## COLOR SECRETS.

No. 41.—Save Your Nerves.

American business men are becoming nervous. They grow old before their time, and lose much joy of life, from constant worry and bother. Competition is fierce, but it is not competition, half as much----strikes are a perpetual menace, but it is not strikes, half as much----bad debts are troublesome, but it is not failure to collect, half as much---it is not all of these, half so much, as it is disappointment in materials. There is a demand for lower prices, in the purchase of materials, which drives down the value of so many goods to a point where they can be nothing else than disappointment. It is impossible to secure gold at the price of brass. Even those who are willing to pay for genuine goods often find great difficulty in procuring them.

It has been our aim, for more than a third of a century, to produce what is reliable. Our multitudes of customers have been relieved from at least one source of worry. Whatever else goes wrong, in the factory, or with the contract, they can rely on Murphy Varnishes and Colors. There are new people coming into business, all the time, who are not yet our customers. It is for them we advertise. To them, let us say, in perfect candor, they will not find the Murphy name on anything that causes worry. The name is a guarantee. The price is just as low as it can be made, and maintain the value. You may rely upon it that we shall maintain the value---for our own sake. Reliability is our reputation--and that is worth more than anybody's custom.

### MURPHY VARNISH CO.

Please mention "The Hub" when you write.



# SUPERIOR STRENGTH WHEELS



JONES' BEST  
1855 1901  
"2"

1855 1901

**PHINEAS JONES & CO**  
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## Shaft Shackle

MADE BY

**S. R. BAILEY & CO.**

AMESBURY, MASS.

Are safe, silent, simple, strong, neat, quick-shifting, and interchangeable.  
They embody every feature necessary to a perfect mechanical device.

WE GIVE EVERY ASSISTANCE, CATALOGUES,  
ADVERTISING, ETC., TO DEALERS WHO SELL

## Bailey's Pneumatic Whalebone Road Wagon

### Bailey "PIVOT" Springs

is the only "Bailey" Spring. People who represent  
otherwise are misrepresenting the facts.

Be sure you are getting the

### Bailey "PIVOT" Springs

S. R. Bailey & Co. (Established 1856) Amesbury, Mass.



# BURR PATENT WHEEL



PATENTED JAN. 25, 1899.

## *Advantages in the BURR WHEEL:*

- Large Hub, suitable for any kind of Axle. ♣
- Long and heavy tenons on spokes. ♣
- Long shoulders on spokes. ♣
- A flanged wheel with staggered spokes. ♣
- A rivet on each side of every spoke; none passing through the spokes, using twice the number of rivets used in other makes of wheels. ♣
- A light wheel, both in weight and appearance. ♣
- A wheel that will stay in dish. ♣
- A wheel that will stand in the hub. ♣
- Easy to repair. Three times stronger at the hub than any other wheel made. ♣

WRITE FOR PRICES.

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## CRANE & MACMAHON,

NO. 18 SOUTH STREET, NEW YORK.

FACTORIES:

VIRGINIA and NORTH CAROLINA WHEEL CO., ST. MARY'S SPOKE WORKS,  
and WAPAKONETA BENDING CO.

## WHEELS SARVEN, WARNER,

and WOOD HUBS, Heavy and Light. Heavy Wheels for Business Wagons a Specialty.

MANUFACTURERS OF ★ BRANDS OF  
CARRIAGE AND WAGON WOOD STOCK,

RIMS, SPOKES, HUBS, ETC.,

AND HARDWOOD LUMBER.

SEND FOR CATALOGUE AND PRICE LIST.

The Hickory Nut Brand is made of Second Growth Hickory Rims, Spokes and Elm Hubs.

The Acorn Brand is made of Second Growth Oak Spokes, Bent Oak Rims or Sawn Felloes. Thoroughly Seasoned Stock.

O. W. SEBOLD, Pres't

J. H. BEACHLEY, Vice-Pres't

F. S. BARRICK, Sec'y.

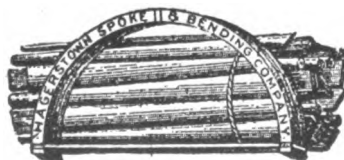
S. A. MUNN, Treas.

A. S. HARING, Sept.

## The Hagerstown Spoke & Bending Co. Hagerstown, Maryland, U. S. A.

MANUFACTURERS OF

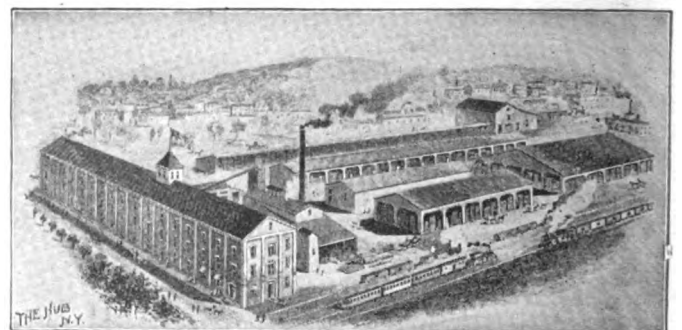
## Spokes and Rims



EXPORTERS OF  
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The celebrated  
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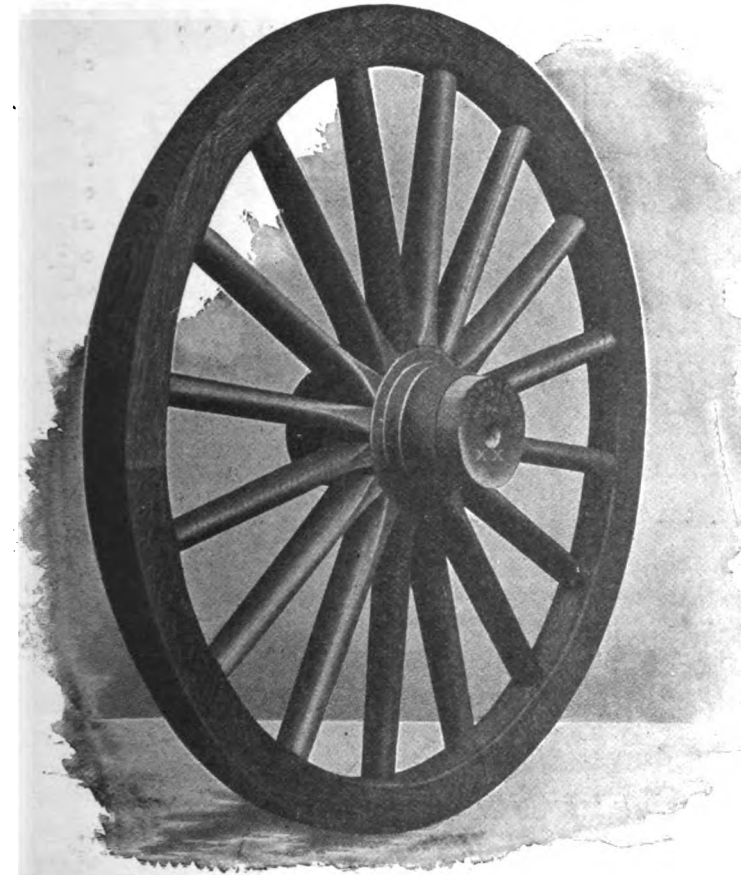
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of...

## WHEELS

For

**Carriages,  
Automobiles,  
Business Wagons  
and Trucks.**

Warner, Sarven, Kenney, Sweet, Wood Hubs.



## Edward Stinson & Co.

BALTIMORE  
WHEEL  
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MANUFACTURERS OF

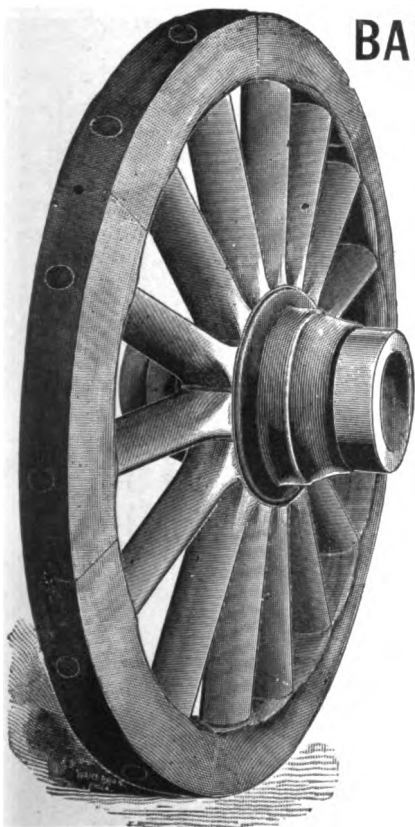
Warner,  
Sarven,  
Plain,

Compressed  
Band and  
Sweet's Hub

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ALL SIZES.

*With or Without  
Steel, Iron  
or Rubber Tires.*



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HIGH GRADE STOCK  
A SPECIALTY.

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### THE WORLD

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*The Best at  
the Price of  
the Cheap.*

*Wire wheels with hubs attached, any size or style, for either solid or pneumatic tires.*

*Our plant is the best in the United States, fully equipped with up-to-date labor saving machines.*

*No order will be too large for us to handle. All orders will be filled promptly.*

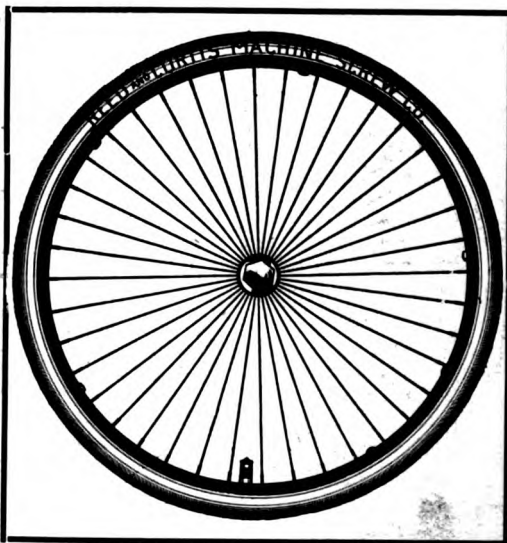
*We will always carry a large supply of hubs turned from the bar, or hubs of the tubular type, and we will sell them at the same price that you are now paying for cast iron, or any other cheap grade hubs.*

*Before placing your contract be sure and see our line and get our quotations.*

**WRITE FOR CATALOG "D."**

**REED & CURTIS MACHINE SCREW CO.,**

**WORCESTER, MASS.**



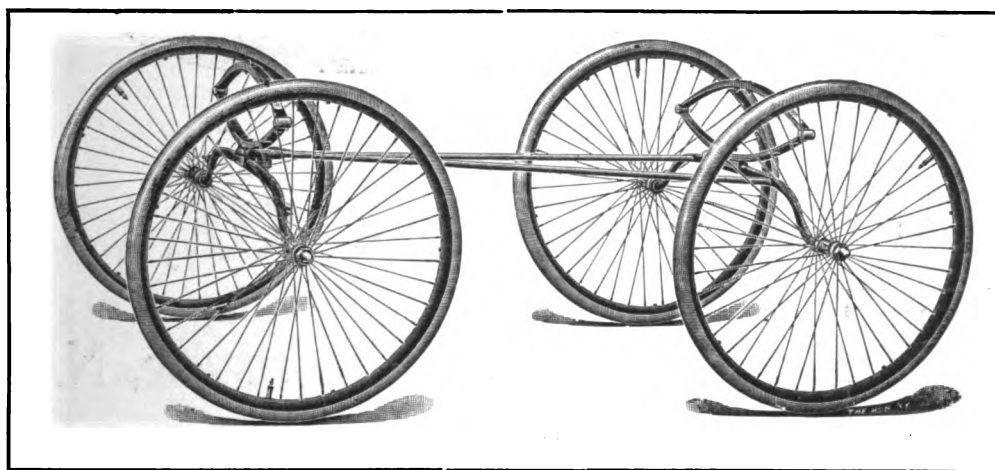


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York  
City,

MAKERS OF THE

## "EMPIRE" MODEL PNEUMATIC GEARS



FOR ALL CLASSES  
OF . . . . .

Buggies  
Carriages  
Coaches  
Trucks and  
Motor Vehicles.

This gear is fitted with "Empire" Ball Bearing Axles, but you can have Endless Groove Boxes if you prefer; but if you want to save horseflesh, and wear and tear generally, the Empire is "it." Also it is dust and water proof—no hot boxes possible. They are not made of malleable castings, but turned from solid cold-rolled bar steel; and the cones and races from best quality tool steel. All sizes from  $\frac{5}{8}$  up to  $4\frac{1}{2}$  inches, to carry up to 52,000 pounds. The tubular reaches are dove-tailed and brazed solidly into the rear axle.

The *simplest and most convenient Shaft Coupling* ever invented. Not a bolt, nut, rivet, spring, strap or screw about it, but it's absolutely safe. Empire whiffletree connection. No point to catch the sponge, brush or horse's tail. Finally, there is the new fifth wheel, which requires no oiling. Stops can be placed where needed to prevent wheels rubbing against the body.

CHARLES S. CAFFREY CO.  
CARRIAGE BUILDERS,  
Camden, N. J.

Warerooms: 1712 and 1714 Chestnut Street, Philadelphia.

CAMDEN, September 23, 1899.

GENTLEMEN:—Replying to your favor of the 19th inst., you may gladly use our name in your catalogue as users of your axles, as you state. We have found your axles to be very satisfactory.

Yours truly,

CHARLES S. CAFFREY CO.

# Standard Anti-Friction Equipment Co.

Factories at CHICAGO, ILL., WILKES-BARRE, PA., and AMESBURY, MASS.

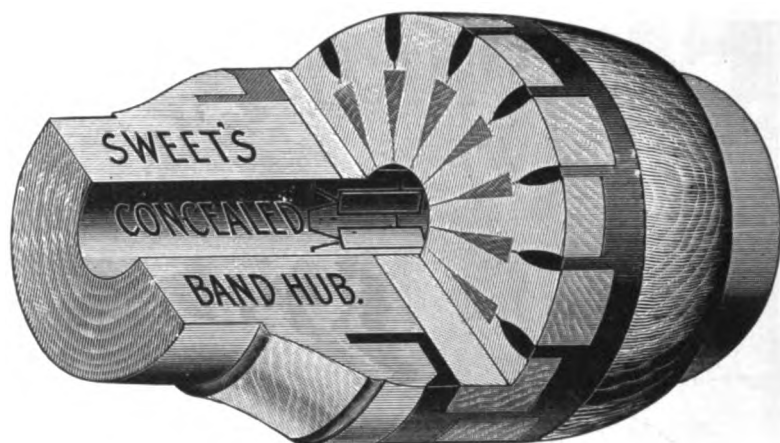


# There are Hubs and Hubs,

BUT THERE ARE  
NONE SO

## “SWEET”

AS THIS ONE.



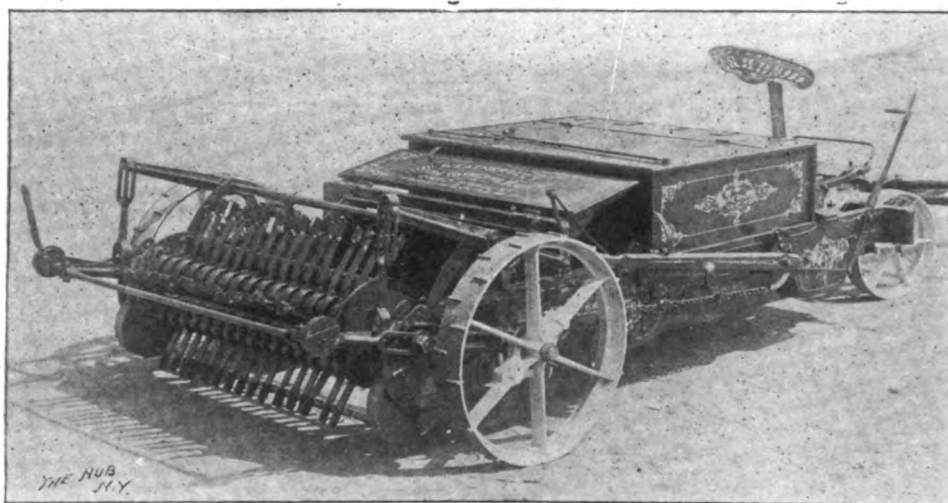
MANUFACTURED INTO WHEELS BY

## SHORTSVILLE WHEEL CO.,

ALSO SARVEN, WARNER,  
KENNY, SHELL and WOOD  
WHEELS

Shortsville, N. Y.

## WEATHERBEE'S STONE GATHERING MACHINE



PATENTED.

THIS INVENTION WHICH IS HEREWITH ILLUSTRATED, IS A MACHINE FOR GATHERING STONE,  
AND CONSISTS OF THE FOLLOWING PARTS:

**FIRST:**—An efficient picking device for loosening stones in the surface of the ground, thus facilitating the operation of the gathering device.  
**SECOND:**—A revolving propelling device by which the stones are driven from the ground into a box or receptacle suitably located to receive them, guides being provided to direct the course of the stones to the receptacle.  
**THIRD:**—A mechanism for supporting, adjusting and regulating the propelling device in position, said mechanism being automatic in operation, thus rendering the revolving propeller self-adjusting during operation.  
The machine will work on uneven ground. It works well on ground that is sowed and seeded down any time after sowing until the grain is four or five inches high, and does no injury. It is a benefit to grass land, the rake that goes ahead to loosen the stone does the most of the cultivation, but the cylinder does a part, as it is intended to run very close to the ground, there being wheels under each end to adjust it to the uneven surface. These wheels can be raised or lowered, according to condition of ground. The land can be rolled before or after picking stone. It will work on a side hill either going up or down, but draft is less going lengthwise. It is a fine thing for a stony garden. It not only cleans up stone, weeds, etc., but pulverizes the ground and prepares it for seed. It will pick up stone from the size of a butternut to one weighing twenty pounds at the rate of five acres per day on ordinary stony land. The machine can be worked as easily on meadow land as a combined mower and reaper. On plowed land, where hilly, three horses can be used, if necessary. The machine holds from 800 to 1,000 lbs. of stone at a load, gathering this amount in from three to five minutes. After the stones are in the receptacle they can be easily shoveled into a wagon or pile.

Would like to arrange with responsible company to manufacture this machine on a royalty basis, or I would sell patent for a reasonable price

**W. R. WEATHERBEE, Richfield Springs, N. Y.**

Please mention "The Hub" when you write.



# FINE CARRIAGE WHEELS.

E. FLICKINGER,  
President and Manager.

Capacity 500 Sets per day.

OUR TIRE PLANT ENABLES CARRIAGE AND WAGON MANUFACTURERS TO HAVE THEIR WHEELS TIRED BY EXPERIENCED WORKMEN. CAPACITY OF TIRE DEPARTMENT, 250 SETS PER DAY. CORRESPONDENCE SOLICITED.

THE FLICKINGER WHEEL CO.,  
MANUFACTURERS,  
GALION, OHIO.

## Don't Worry

If you have trouble getting finished SARVEN PATENT HICKORY SPOKES  $1\frac{3}{8}$  and under, write us. Our prices will surprise you. Of course we make all kinds. Write us now.

SUWANEE SPOKE & LUMBER CO.,  
KUTTAWA, KY.

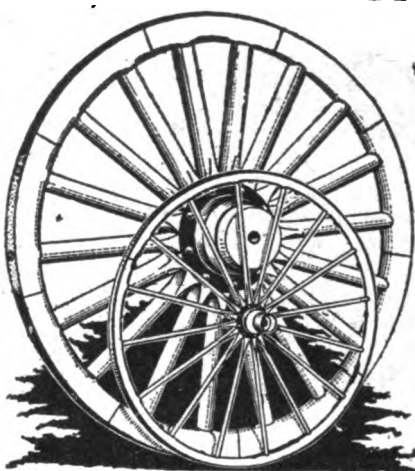
## EBERLY & ORRIS,

Mechanicsburg, Pa.,

Manufacturers of

LIGHT and  
HEAVY  
WHEELS

Wheel Stock and  
Hard Wood Lumber.



## BOOB'S DROP AXLE DOUBLE AND SINGLE ELLIPTIC SPRING GEAR, with Short Turn Fifth Wheel.



Adapted for Milk, Bakery and Grocery Wagons, all complete, with wheel and shaft ready for body, for \$24.00.

Send for catalogue, giving prices on a full line of Buggy, Bike and Business Wagon Gears, Wheels, Carriage and Wagon Hardware of every description.

WILLIAM W. BOOB, 450 E. MAIN STREET,  
CENTRE HALL, PA., U. S. A  
Export Orders a Specialty.

Want a little more business? Try a card in  
**THE HUB.**

Results are sure to follow.

## WHEELS WHEEL MATERIAL AND BENT WOOD WORK

The Wheel & Wood Bending Co.,

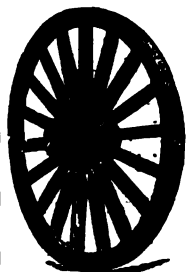
Send for Catalogue. BRIDGEPORT, CONN.

## BALTIMORE HUB FACTORY.

We have now enlarged our factory with the latest improved WHEEL MACHINERY and, having a surplus stock, we are now in position that we will not be undersold. We are prepared to meet all competition.

GUARANTEE.—All our X and XX Wheels will be covered by a very liberal guarantee for one year; should any XX wheels prove defective, will be replaced with new wheels, customer keeping old wheels for their trouble; any X grades proving defective will be repaired free of charge. Will make a SPECIALTY of good No. 2 and No. 1 wheels, that will give satisfaction. Rouse bands furnished on X and XX grades free of charge when desired.

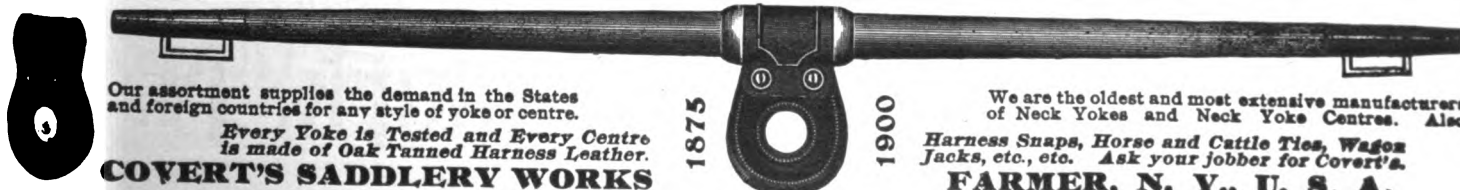
JOHN STINSON, Proprietor,  
326-332 N. Holliday St., BALTIMORE, MD.



## WHEELS

Warner, Sarven,  
Plain, Star  
and Compressed.

THE WOODS is full of CHEAP NECK YOKES and NECK YOKE CENTRES, but when a carriage manufacturer wants a good, safe yoke for his own use he always buys COVERT'S. You should insist upon it and accept no other.



Our assortment supplies the demand in the States and foreign countries for any style of yoke or centre.

Every Yoke is Tested and Every Centre is made of Oak Tanned Harness Leather.

COVERT'S SADDLERY WORKS

1875

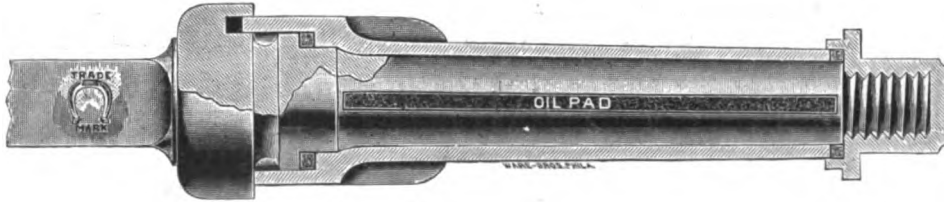
1900

We are the oldest and most extensive manufacturers of Neck Yokes and Neck Yoke Centres. Also Harness Snaps, Horse and Cattle Ties, Wagon Jacks, etc., etc. Ask your jobber for Covert's.  
FARMER, N. Y., U. S. A.

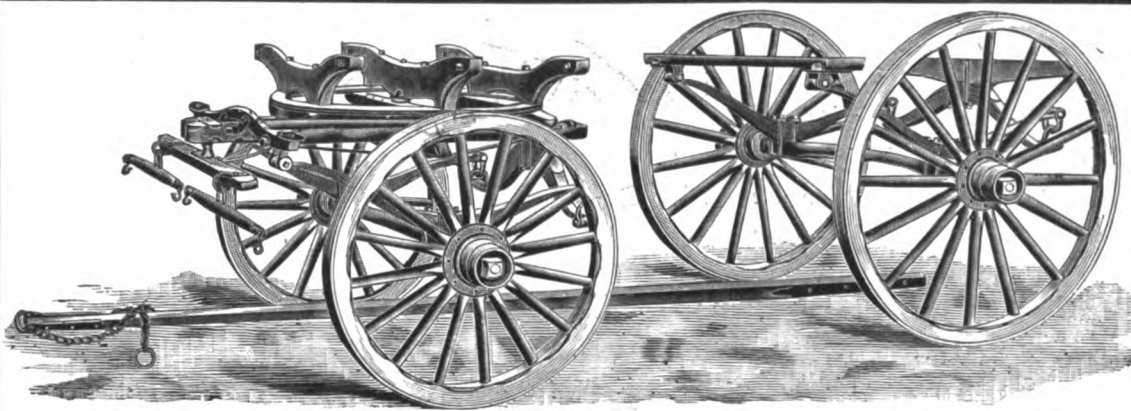


Manufacturers of "Collinge Collar" and other styles of Axles for "Long Distance" use.

Also Manufacturers of the best "Concord Express Axles."



**SPEARS AXLE CO.,** WHEELING, W. VA.,  
U. S. A.



Complete Gears as shown above, ready to receive body, for light and heavy work, can be furnished promptly. In ordering give full specifications, or such description as will enable us to make up specifications. Dealers in wagon materials will quote prices on our gears.

**SELLE  
GEARS**  
THE SELLE  
GEAR CO.

AKRON, O.

**KEEP YOUR EYE ON US.**

*We are just closing our first Quarter of a Century, as spring makers. Very few changes or improvements have been made by any one in springs. Watch Us enter the second quarter of the century very soon.*

*We are going to revolutionize the business. Write us and we will give you "A Tip."*

**THE HESS SPRING & AXLE CO.,** CARTHAGE, OHIO.

# Hartford Axle Company.

Good Axles are the result of experience, careful attention to smallest details, and the constant desire to improve. The continual upbuilding of our reputation has been guided by these principles, and a trial of our work will convince you of the excellence of our product. We make all styles, including the Brewer.

- - **Dunkirk, N. Y.**

Please mention "The Hub" when you write.



# MORSE TWIST DRILL AND MACHINE CO.,

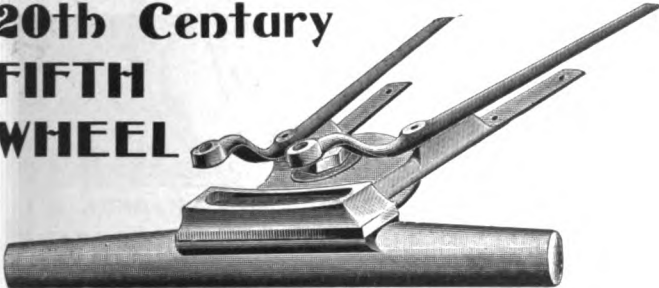
NEW BEDFORD, MASS., U. S. A.

MANUFACTURERS OF

Arbors, Beach, Steison and Center Drill Chucks; Counterbores; Countersinks; Increase Twist and Constant Angle Drills; Drills with Oil Holes; Drills with Grooved Shanks; Dies, Gauges, Mandrels, Metal Slitting Saws; Milling Cutters; End Mills, Shell End Mills, Taper Pins, Adjustable and Expansion Reamers, Reamers with Oil Holes, Screw Plates with Dies; Sockets; Sleeves; Taps and Tap Wrenches.



## 20th Century FIFTH WHEEL



Swaged or Round Pattern for Buggies or Surreys.  
Patented September 4th, 1900.



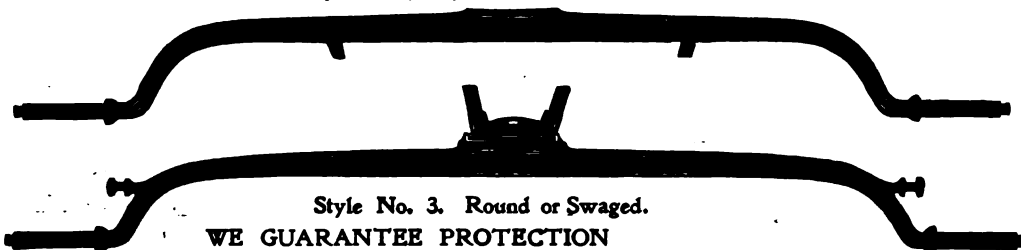
Rear Axle Center, with Solid Forged Perch Connections for Buggies or Surreys, Round or Swaged.

**Our Naked Axle Parts  
are Winners.**

SAVE TWO WELDS AND  
SAVE MONEY.

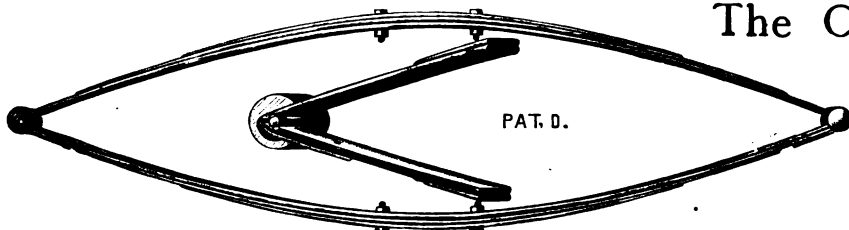


**D. Wilcox Mfg. Co.,**  
Mechanicsburg, Pa.



Style No. 3. Round or Swaged.  
WE GUARANTEE PROTECTION  
20TH CENTURY FIFTH WHEELS.

## THE BEST THAT CAN BE MADE...



The Osgood Morrill Spring as made under the personal direction and approval of the inventor by

**TUTHILL SPRING CO.,**

315 Clinton Street, Chicago, Ill.

**NO RATTLE, NO FRICTION, NO NOISE.**

Write for particulars and prices.

## FINE CUTS

help your business more than you think. Let us quote prices on your future wants in this line.

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# THE OLD RELIABLE



**No. 30.**

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**No. 60.**

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OUR FACILITIES enable us to furnish our IRONED UP SETS **BETTER and AT LOWER PRICES** than you can produce them, no matter how many or how few you make.

**BETTER INVESTIGATE THIS.**

**THE J. A. COOPER AND D. P. CO. STRUTHERS, OHIO, U.S.A.**

RECOGNIZED LEADERS and the only PRACTICAL CAR-RIAGE MAKERS in the GEAR WOOD TRADE.

Send for CATALOGUE E

## THE NIELSON Roller-Bearing Fifth Wheel.

is the only PERFECTED and PRACTICAL ROLLER-BEARING FIFTH WHEEL on the Market to-day.

**HAS NO EQUAL. DON'T BE FOOLED.**



**WHY THE NIELSON IS THE BEST.**

It is the product of a practical wagon builder, who has made a careful study of his trade and the necessity of developing something new in the way of a fifth wheel that would overcome the friction caused by the old circle in use on all kinds of platform vehicles. The present fifth wheel is the outcome of years of experiment, and contains all the good features lacking on other fifth wheels. The rollers, while an important part of the Nielson patent, without the other features, would be as worthless as some others that are offered as "the best."

**Don't let anybody tell you that So and So's Roller Bearing Fifth Wheel is just as good as the Nielson.**

Roller-bearings, like ball bearings, to prove of value must be properly housed. This is one of the greatest practical points on the Nielson, as it is constructed so that neither dust nor the elements to which fifth wheels are subject can affect the rollers.

As the rollers overcome all friction, the use of oil, grease or other lubricants is obviated, and thus when once the Nielson is attached to a vehicle, the user need give this part of the vehicle no further thought, as it will outlast any vehicle. It always works easy, and never gets out of order. No worry about broken shafts or poles, as the Nielson turns easily under the heaviest load. It is a godsend to dray horses, as well as to the users of vehicles for mercantile purposes, as the Nielson not only saves the horses, but prolongs the life of the vehicle.

**YOU WANT THE BEST. GET THE NIELSON.**


Ask your dealer or write for full particulars to


**CHRISTEN NIELSON, 745 Third Avenue, BROOKLYN, N. Y.**

Please mention "The Hub" when you write.




# ARE THEY COMING YOUR WAY?






**WE ARE  
DOING ALL  
WE CAN.**



**IF NOT,  
WHOSE  
FAULT?**

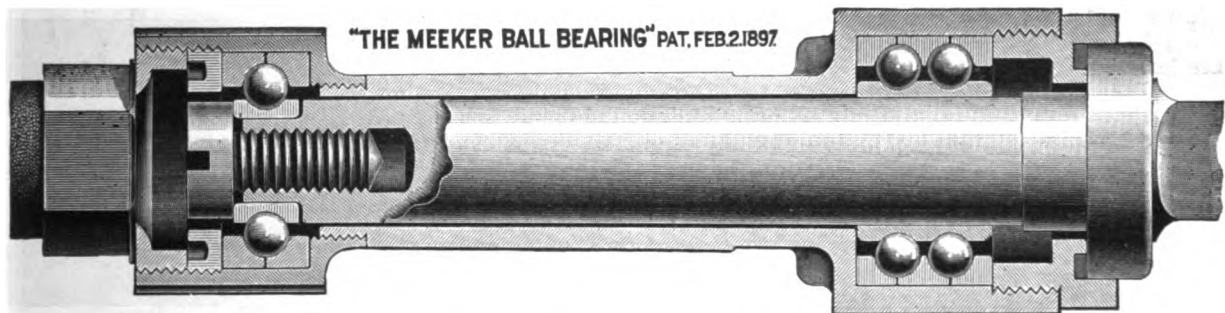


**SEND FOR CATALOGUE  
AND PRICES.**

## SIDNEY POLE & SHAFT CO.

FACTORIES: { SIDNEY, OHIO,  
ST. LOUIS, MO.

# THE MEEKER BALL BEARINGS



**Cheapest! Because they are the best. All sizes built in proportion to the work required of them.**  
Write for our Catalogue of Carriage Specialties

## LOW WOOD HUB AND SARVEN WHEELS

**The Best Wheels Made, with Pneumatic Tires and Ball-Bearing Axles, for Runabout Wagons and Automobiles.**



# THE MEEKER MFG. CO., DAYTON, OHIO

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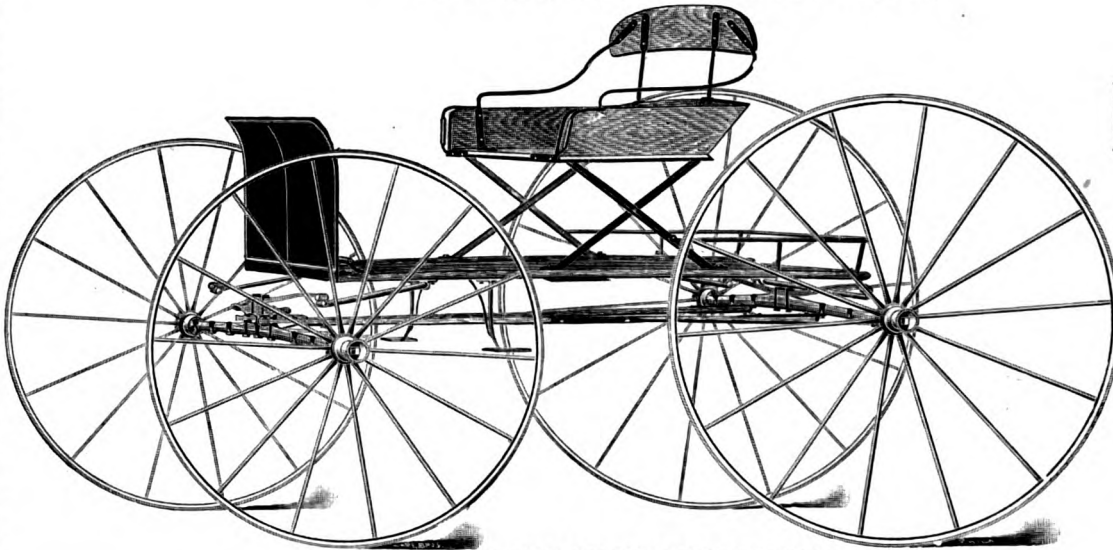


# *The Best Buckboard on Earth!!*

Is made by using THE MULHOLLAND SPRINGS.  
The Popular Vehicle from Maine to California. ❖ ❖ ❖ ❖

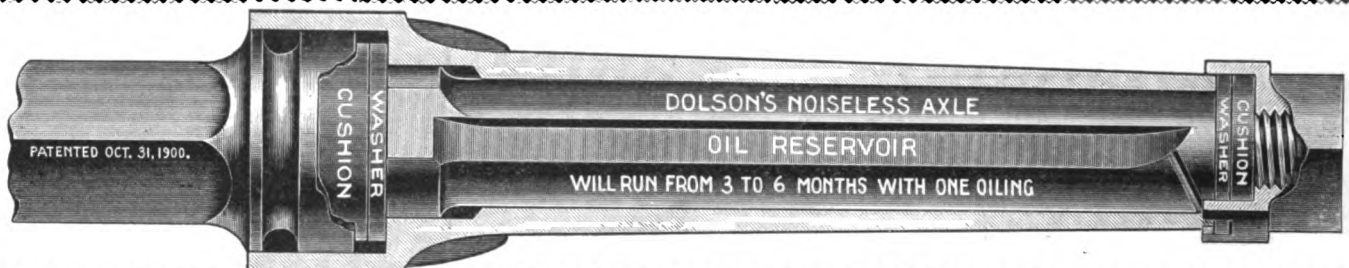
We can furnish you the complete job in the white, and make a specialty of furnishing the slat bottom part with springs attached. Or sell the springs alone to those who desire to manufacture the wagon themselves. ❖ ❖ ❖ ❖

WRITE FOR OUR CATALOG AND PRICES.



No. 44. MULHOLLAND BUCKBOARD WAGON.

❖  
**MULHOLLAND**  
**SPRING &**  
**GEAR CO.**  
❖  
**DUNKIRK,**  
**N. Y.**



## **Dolson's Noiseless Axle**

THE GREATEST IMPROVEMENT ATTAINED IN AN AXLE

**I**S absolutely noiseless, even though the washers have become badly worn. This Axle is constructed with a cushion in the collar and the nut. These cushions relieve the wheels from sudden jars. The fibre washers rest against the cushions and are so constructed that they do not revolve. The fibre washer which is contained in the nut when in place rests against the shoulder of the arm and the point of the box. The spiral groove at the point of the arm prevents the exit of oil. The peculiar shaped groove on the top of the Axle collects the oil from the box as the wheel revolves, and the "V" opening allows it to escape. This Axle is not complicated in its construction—simply put on the nut and screw it up. It is neat and tasty in appearance, will run from 3 to 6 months with one oiling and is the only Axle specially adapted to rubber tire vehicles, as it will not rattle or jar under any circumstances.

FOR FURTHER PARTICULARS, AND PRICES, ADDRESS,

**Liggett Spring and Axle Company,**  
**PITTSBURG, PA.**

Please mention "The Hub" when you write.



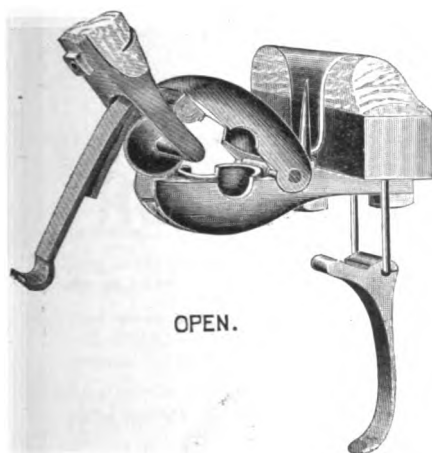
# CONSTRUCTION AND MATERIAL ARE POINTS WE ARE PROUD OF IN THE MULHOLLAND SHAFT COUPLER.

## CONSTRUCTION.

THE Mulholland Coupler is Quick Shifting, Ball-Bearing, Leather Bushed. The Bushings are cemented into jaws and lined with Graphite. It has a non-breakable spring of uniform width and thickness, and a dirt proof flange and interlocking device. It takes up its own wear.

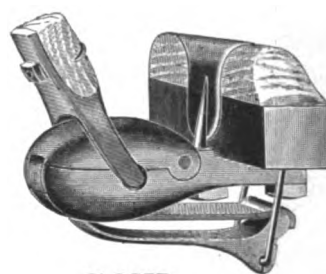
## MATERIAL USED—ALL STEEL.

THE Shaft and Pole Ends are forged from Bar Steel. The Springs are of Crucible Steel, while the Jaws, Levers, etc., are of Bicycle Steel. The STRONGEST, and it may be well to state the most EXPENSIVE materials used in Shaft Coupler construction.



OPEN.

THIS IS WHAT MAKES  
THE MULHOLLAND the  
Most Perfect Shaft Coupler  
on the market. : : : : :  
A sample pair will convince  
you of its merits. : : : : :

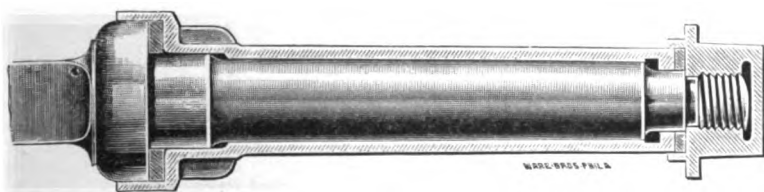


CLOSED.

**Mulholland Spring Co., Dunkirk, N. Y.**

# Doctors' Special Axle.

*This is the finest Axle on the market  
for light and medium weight Carriages.*



*In it there is more value for  
the money than in any other  
at any price. Full particu-  
lars sent on application. \**

*To it, when desired, we can at a small extra cost apply the Brewer  
Longitudinal Axle Lubricator, which is the simplest device known for  
continual lubrication, and has the added merit of not weakening either  
arm or box by the removal of metal at vital points and does not  
allow oil to leak out. \* \* \**

**Dalzell Axle Co.,** South Egremont,  
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# WESTON-MOTT CO. **WIRE WHEELS**

For Cushion, for Pneumatic, for Solid Tires  
**FOR EVERY TYPE OF HORSE-DRAWN OR  
MOTOR-DRIVEN VEHICLE**



Every part of every one of our Wire Wheels is carefully inspected and tested.

The Hubs are machine-turned.

The Spokes are all made from high carbon wire drawn from imported billets.

The Rims are made from the stiffest stock ever used in Rims.

The Bearings are tool ground to size.

All this is expensive—but it's necessary.

In our Wheels you simply get the best made.

And you get it every time.

Send for Booklet.

**UTICA, N. Y.**



Highest Award  
Automobile and Vehicle Bearings  
PARIS-1900

... Visit us at the ...  
Pan - American Exposition  
BUFFALO-1901

Highest Award  
National Export Exposition  
PHILADELPHIA-1899

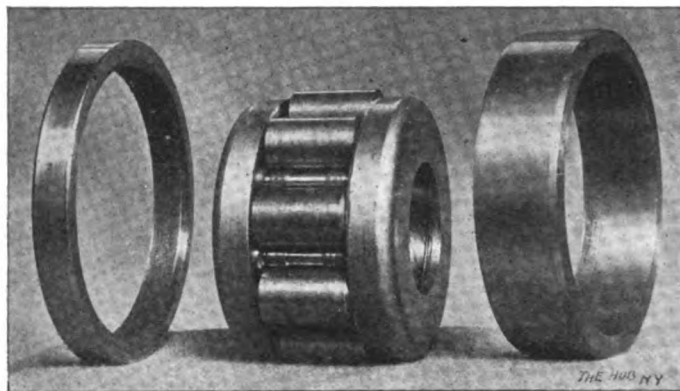
# A. R. B.

## ROLLER BEARING AXLE

COMBINED JOURNAL AND END THRUST BEARING

### THE ONLY BEARING

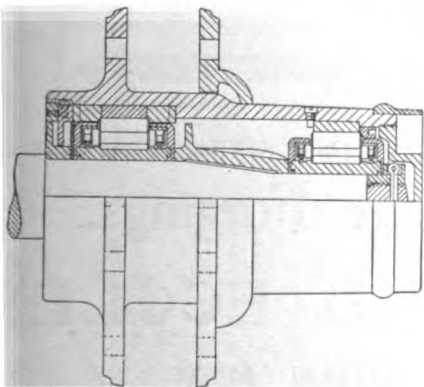
1. That has a purely rolling motion.
2. That will stand the high-  
er speeds.
3. That does not decrease in  
efficiency with the in-  
crease in load.
4. That has a long guarantee  
against wear and break-  
age.



Single Bearing with Outer Race and Bevel Thrust Ring.  
Patents Pending

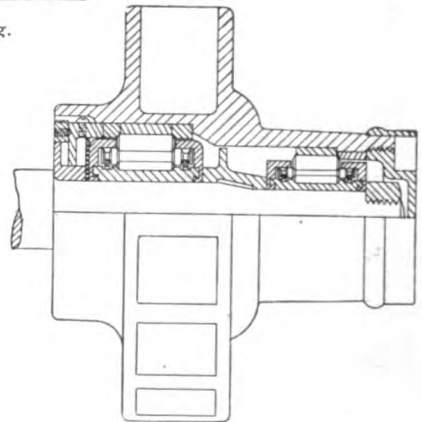
### THE ONLY ROLLER BEARING

5. That is made entirely of  
hardened steel.
6. That combines with a great  
saving of draught great  
durability.
7. That saves over 99 per  
cent. of the Axle friction
8. That has no cage to be  
twisted, broken or worn



### ROLLER BEARING HUBS AND AXLES

For all kinds of Carriages  
and Automobiles — From  
Light Runabouts to Heavy  
Trucks and Drays. . . .



**WHEELS COMPLETE WITH ROLLER BEARING HUBS BUILT TO ORDER. ALSO SINGLE BEARINGS  
FOR AUTOMOBILE DRIVING AXLES, SHAFTING, SHEAVES, SPINDLES,  
MOTORS, CAR BEARINGS, MACHINERY, ETC.**

### NOTE THIS GUARANTEE

WE GIVE A YEAR'S GUARANTEE ON EVERY BEARING MANUFACTURED  
BY US, COVERING DEFECTS OF BREAKAGE OR WEAR. . . . .

**AMERICAN ROLLER  
BEARING COMPANY**

OFFICES AND FACTORY  
32-40 Binford Street  
BOSTON, MASS.



EUROPEAN BRANCH

**AMERICAN ROLLER  
BEARING COMPANY**  
(LIMITED)

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# C.H.A.T.

Helps Secure Situations.

**Carriage, Harness and  
Accessory Traveling  
Salesmen's Association**

**OF THE UNITED STATES.**

**All Commercial Travelers in Above Lines Eligible.  
No Others. Pays Death Benefits.**

|                      |        |
|----------------------|--------|
| Membership Fee, - -  | \$3.00 |
| Annual Dues, - - - - | 1.00   |

Employers of Traveling Men eligible to join as associate members on payment of \$5.00, and are exempt from all further dues.

Manufacturers of carriages, harness or goods that enter into their construction, jobbers of same, can secure good, reliable and efficient salesmen through our Association, as the members of this Association have the best facilities for knowing all about men who are seeking situations, and none will be recommended unless they are first class and worthy of support.

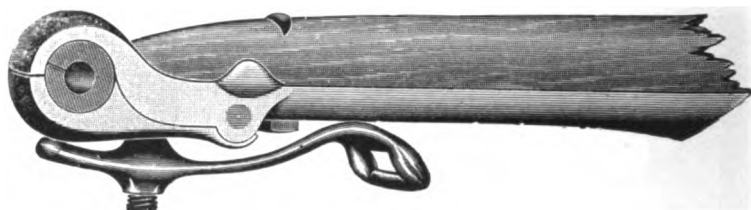
Salesmen in need of a situation, or manufacturers in need of a salesman, address for further information,

**P. D. RANDALL, Secretary.**

*Board of Trade, Springfield, Mass.*

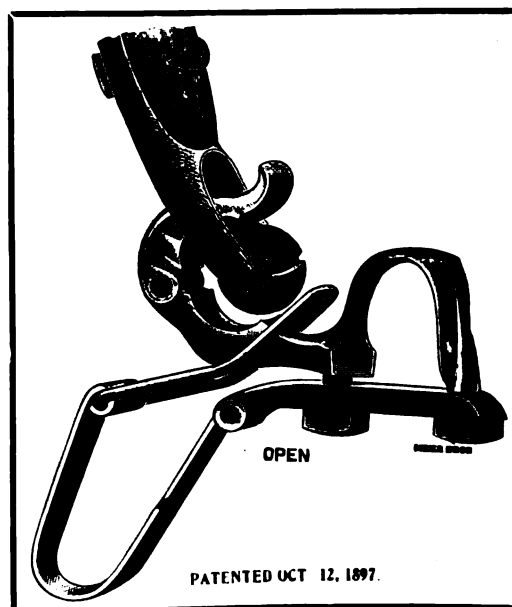
## Eccles Adjustable Shaft Eye.

PATENTED AUGUST 28th, 1906.



## Ball Bearing Shaft Coupling.

SEND FOR DESCRIPTIVE CIRCULARS AND PRICES.



PATENTED OCT 12, 1897.

ALSO GET OUR CATALOG SHOWING FULL LINE OF

**Carriage Forgings.**

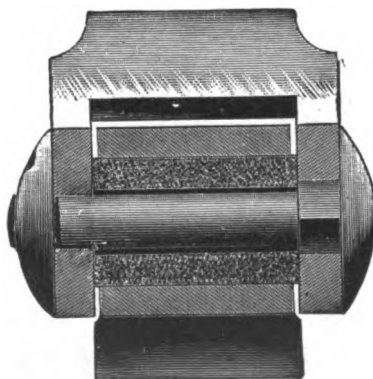
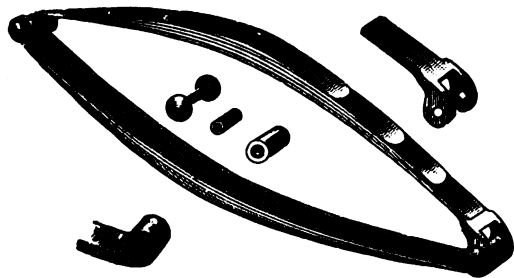
**RICHARD ECCLES,  
AUBURN, N. Y.**

## Elliptic and Coach Platform Springs

WITH RUBBER OPEN-HEADS.

**LARGE SIZE.**—Designed for Broughams, Landaus and Coaches.

**SMALL SIZE.**—Designed for Buggies and Light Carriages.



The Rubber Open-Head

## SPRINGS

Work Freely Without Friction.

No Binding or Squeaking in  
the Heads or Eyes.

Springs of Every Style and Pattern to order,

ALSO CURTAIN ROLLERS and CONCEALED HINGES.  
Exclusively First-Class Work.—The Best that Can be Made.

**SPRING PERCH CO.,  
BRIDGEPORT, CONN.**

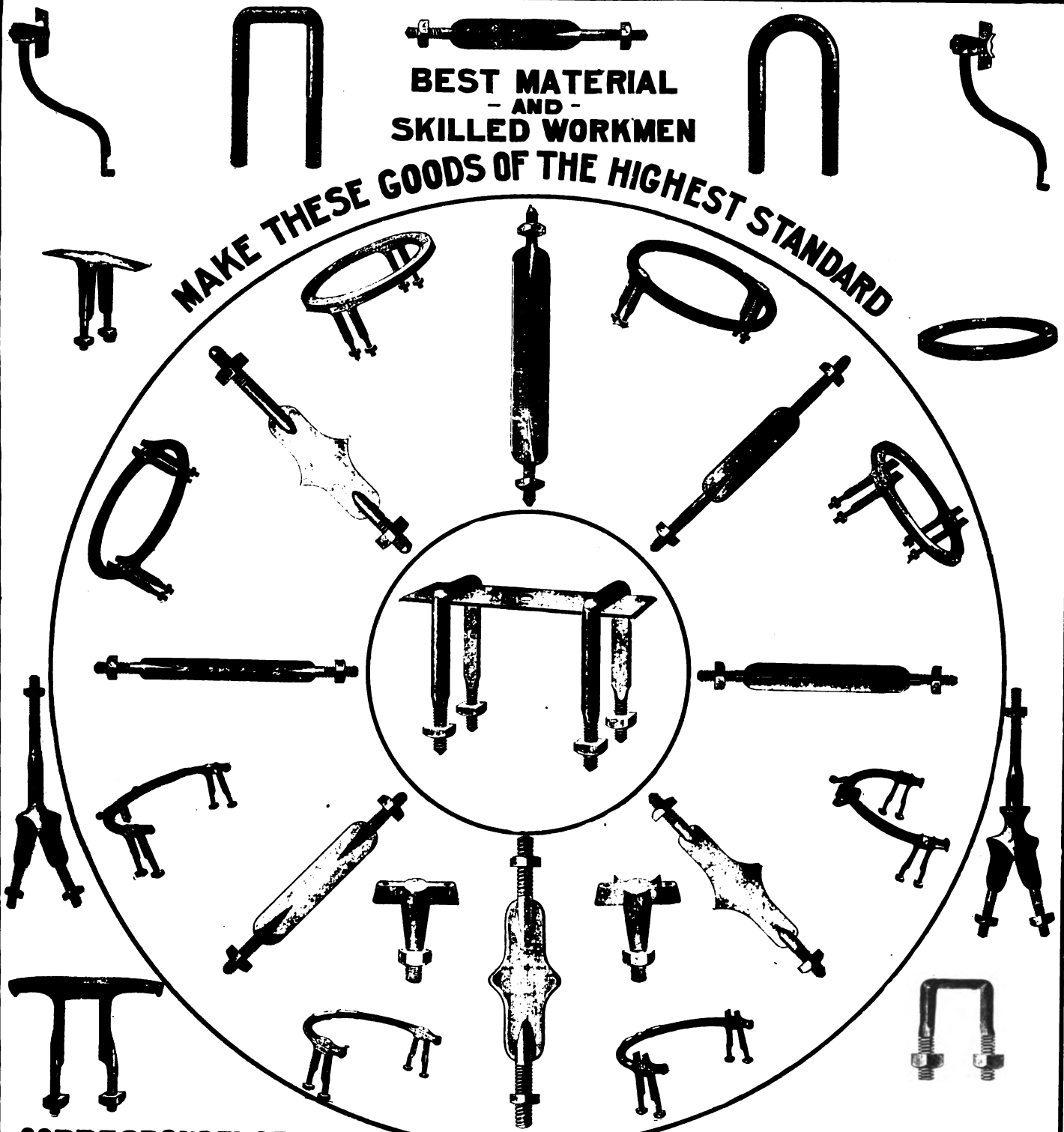
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# ONLY-A-FEW-OF-OUR-MAKE

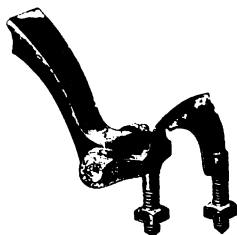
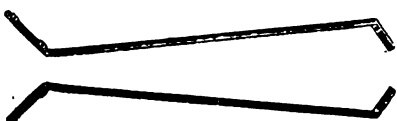
**BEST MATERIAL  
- AND -  
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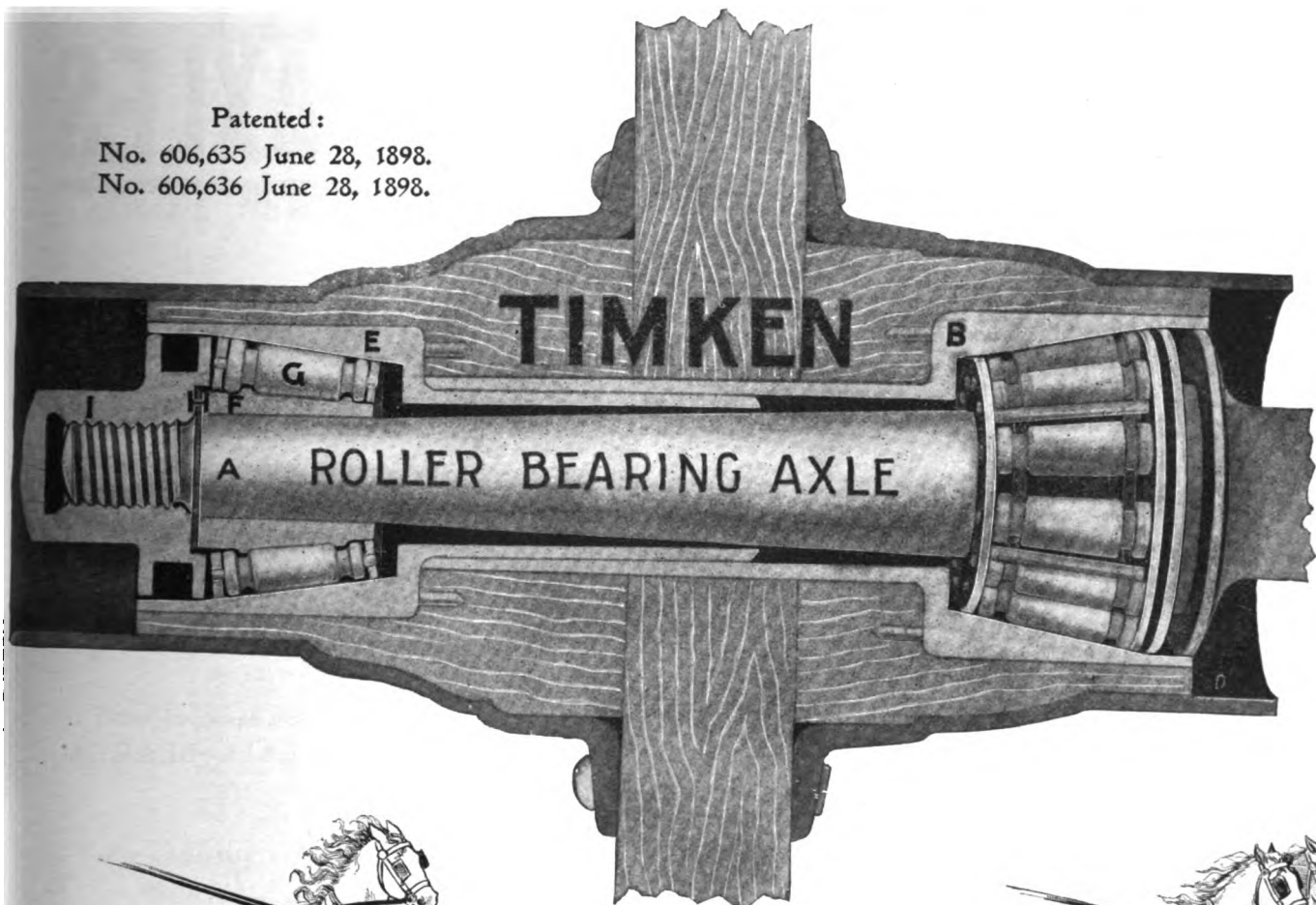
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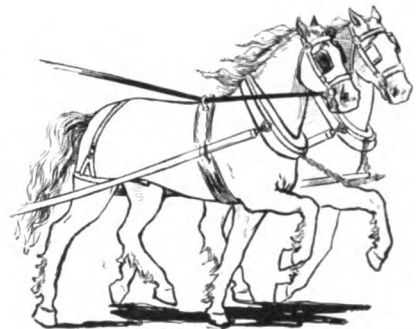
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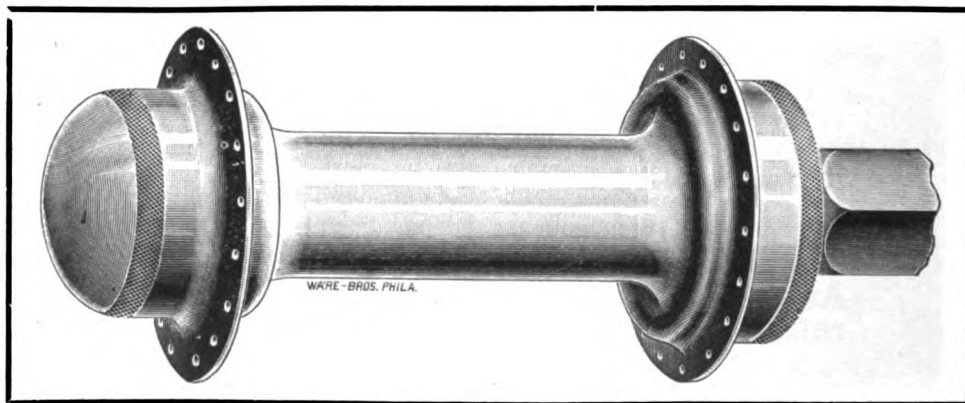
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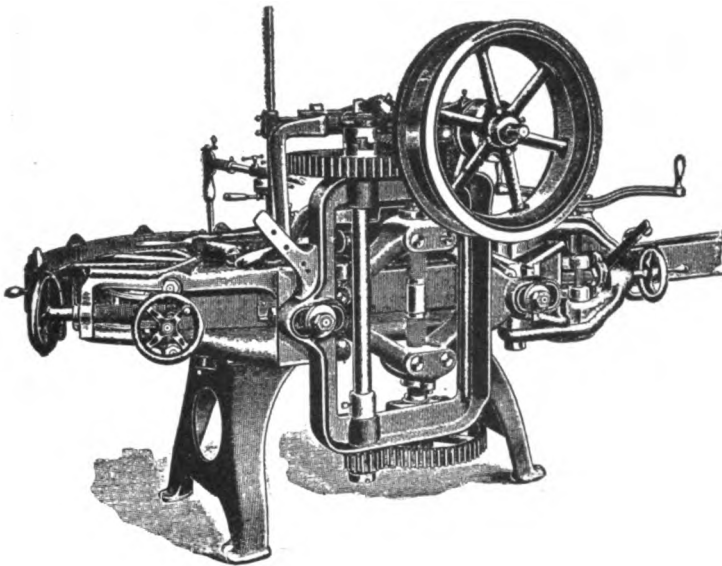
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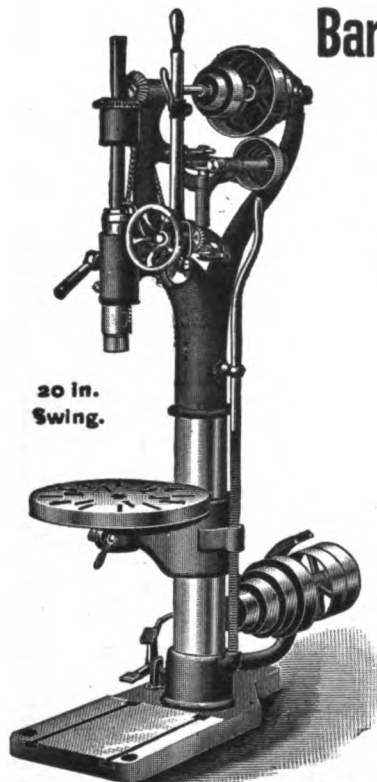
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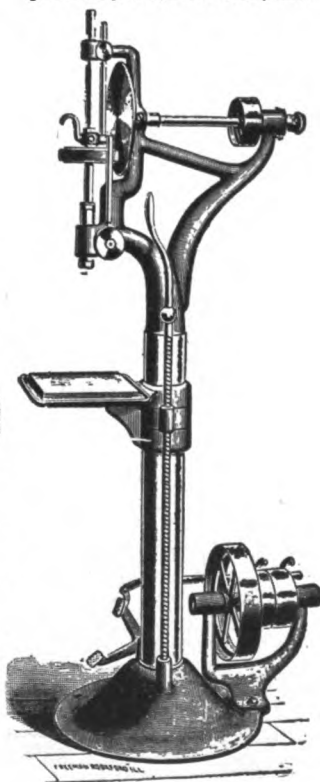
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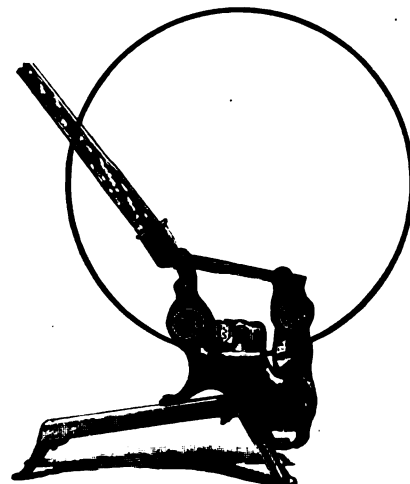
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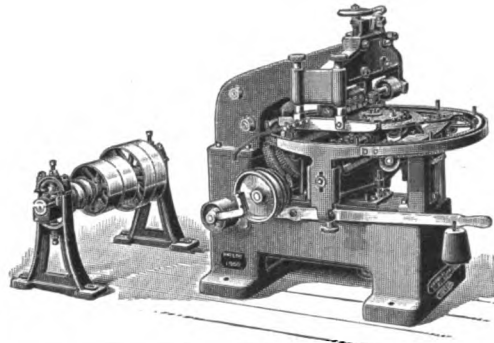
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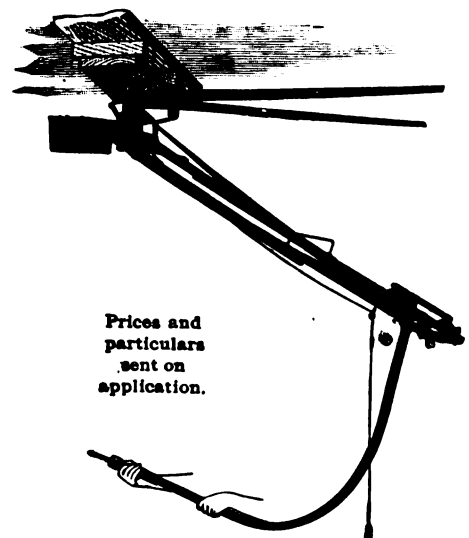
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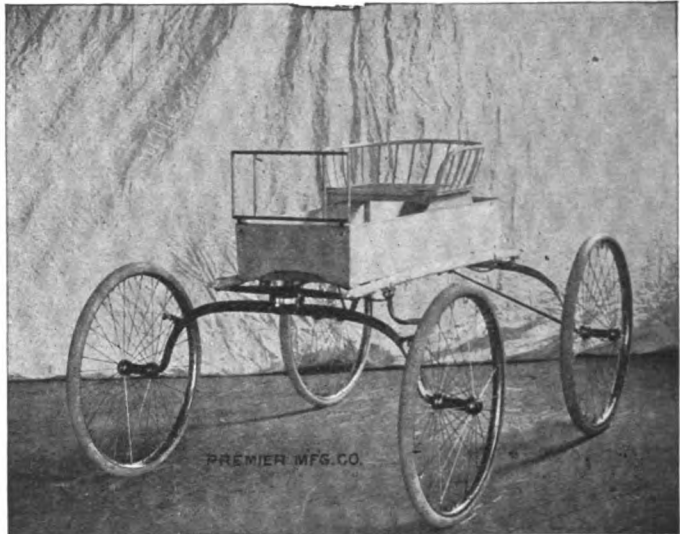


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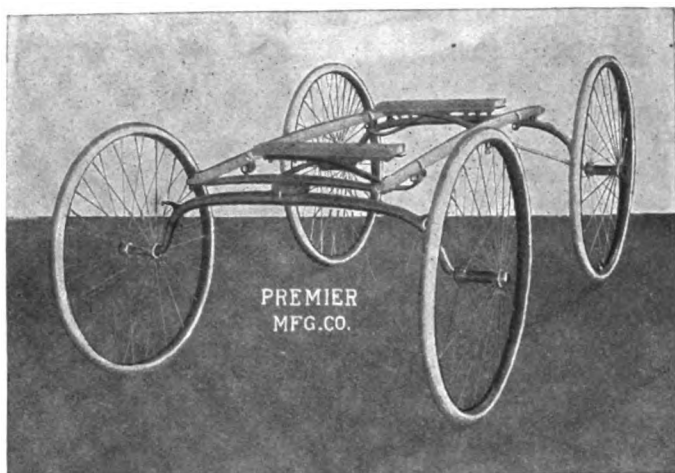
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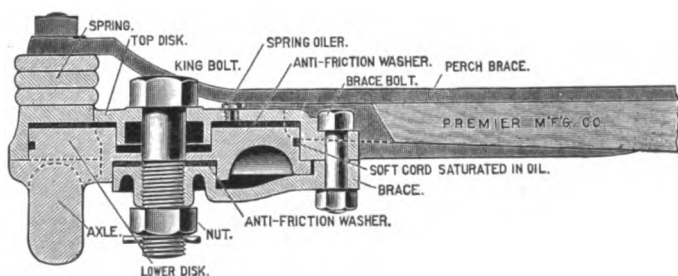


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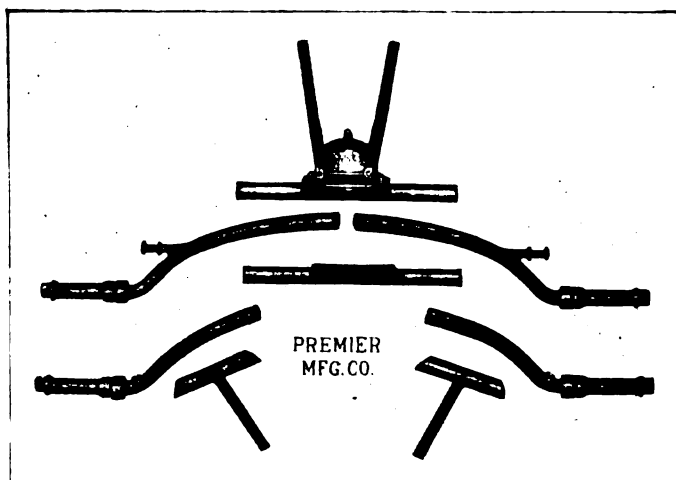
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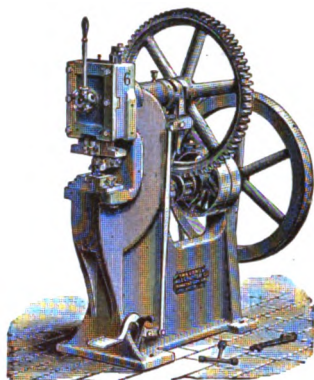
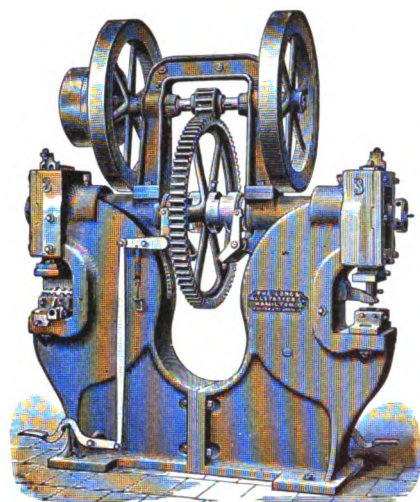
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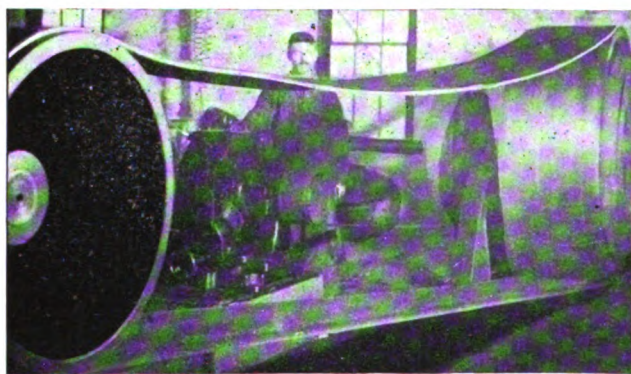
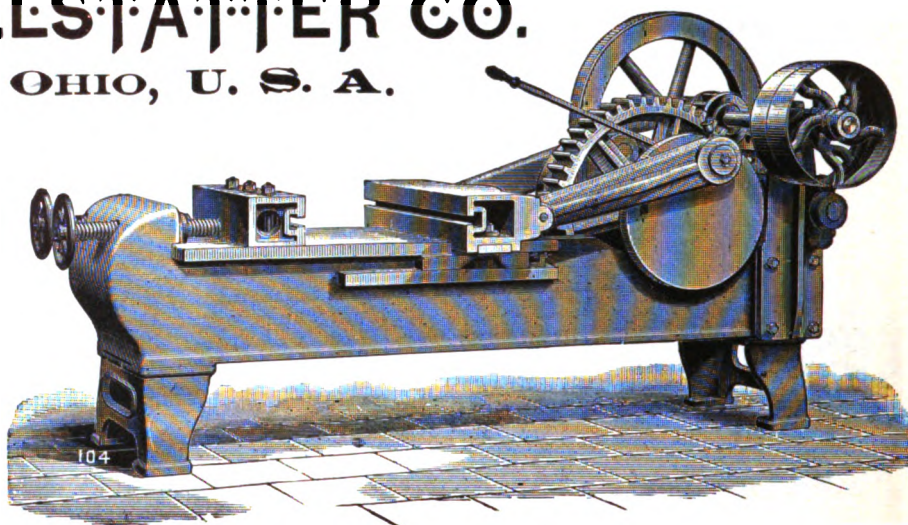
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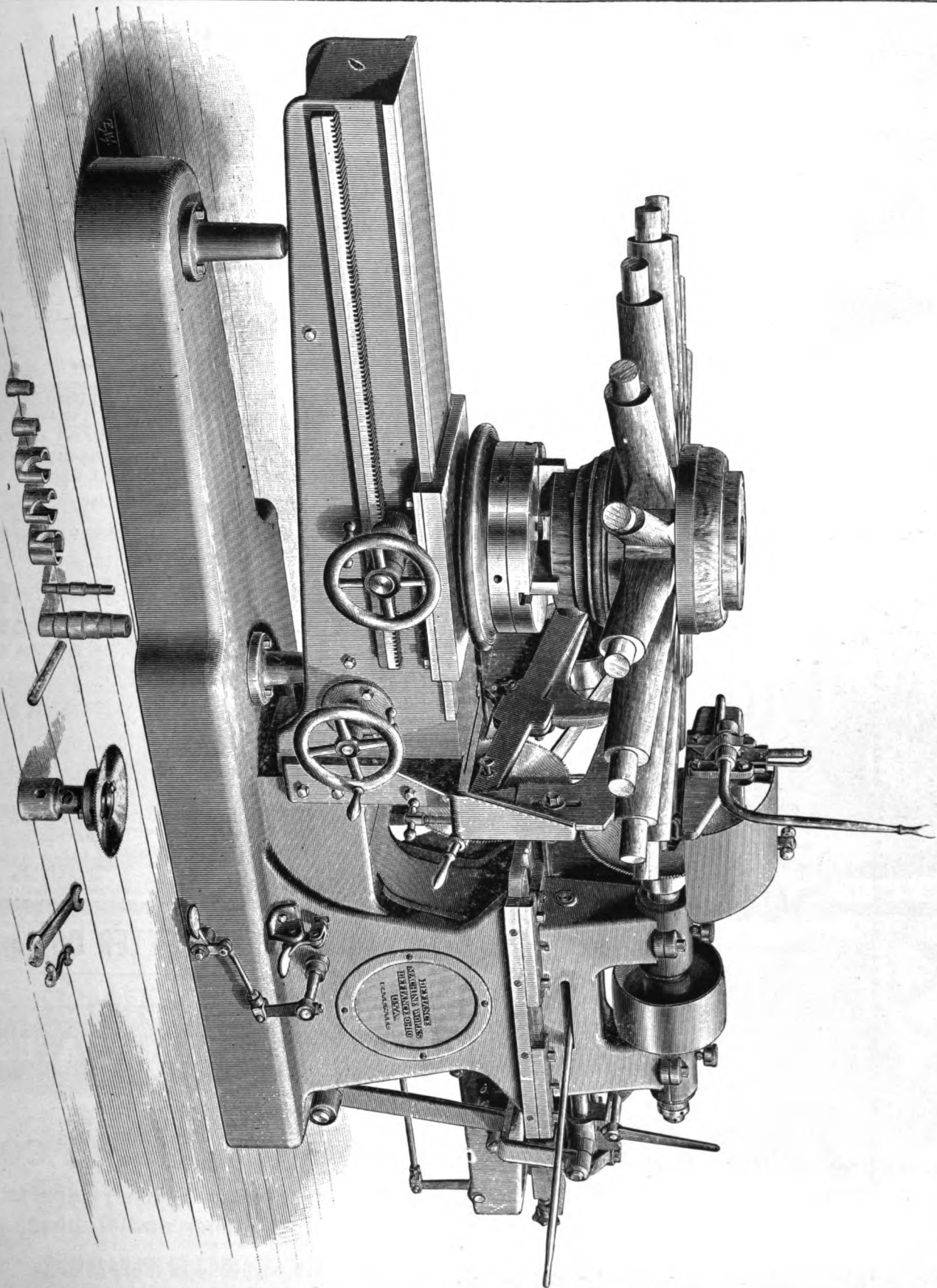
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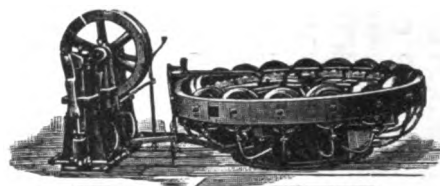
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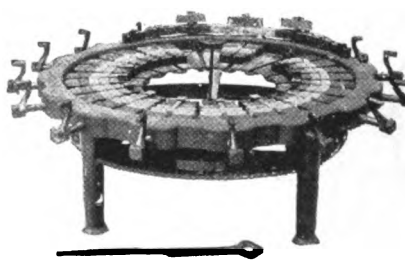
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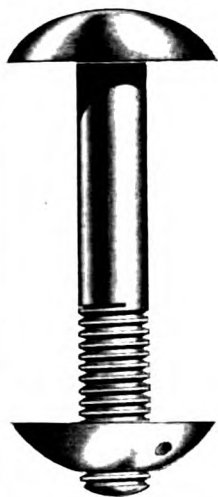
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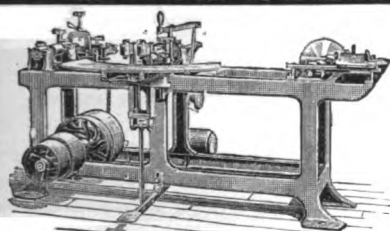


# BOLTS AND NUTS

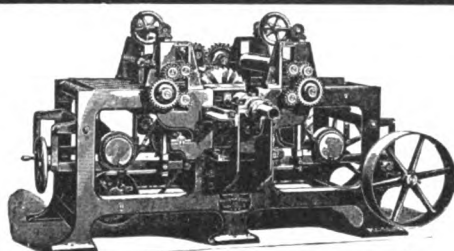
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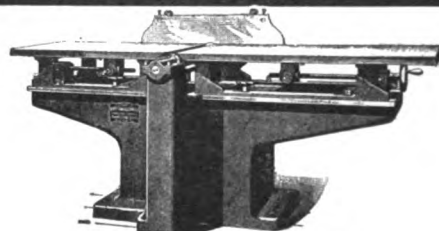
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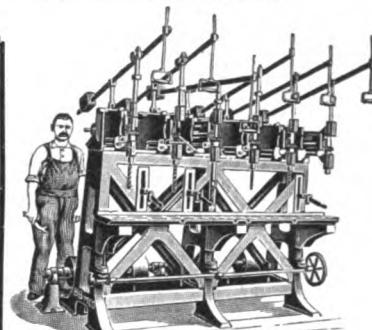
**THE BENTEL AND MARGEDANT COMPANY**

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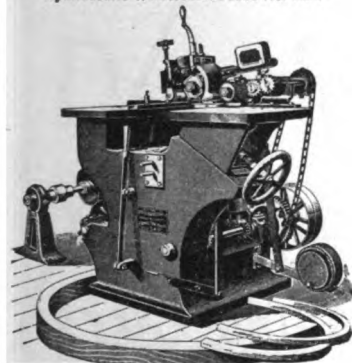
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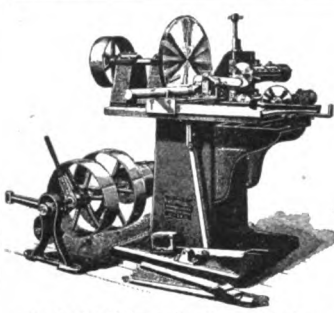
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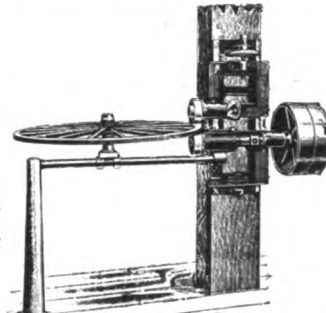
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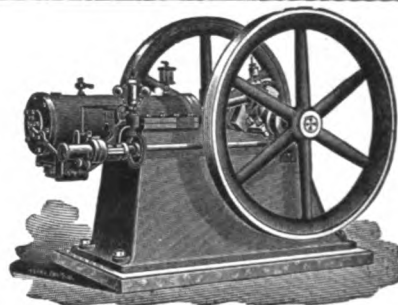


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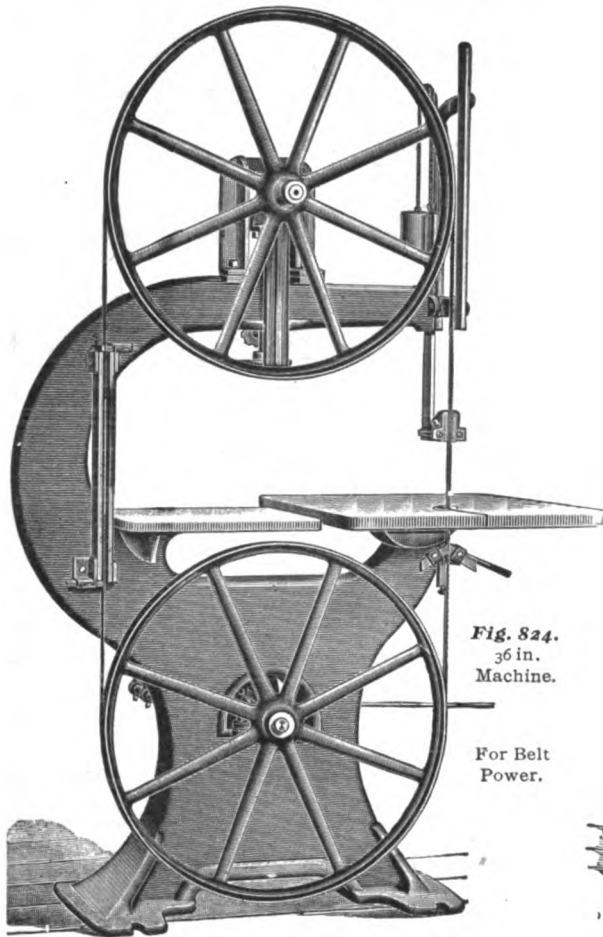


Fig. 824.  
36 in.  
Machine.

For Belt  
Power.

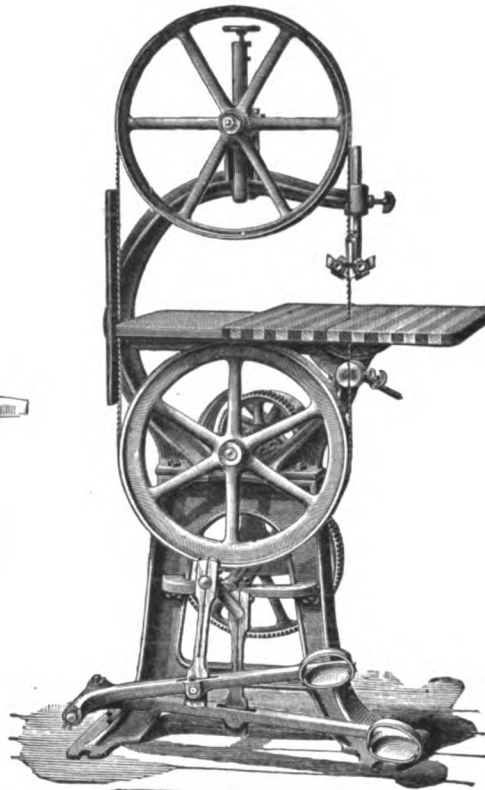
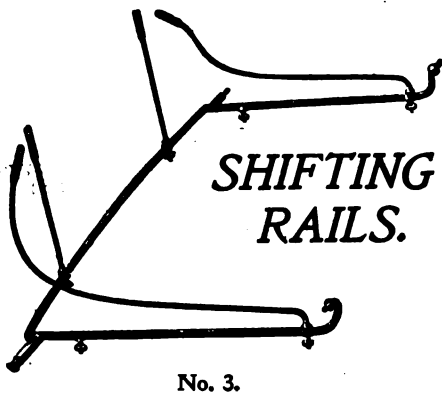


Fig. 721.  
20 in. Machine. Combined Foot or Belt Power.



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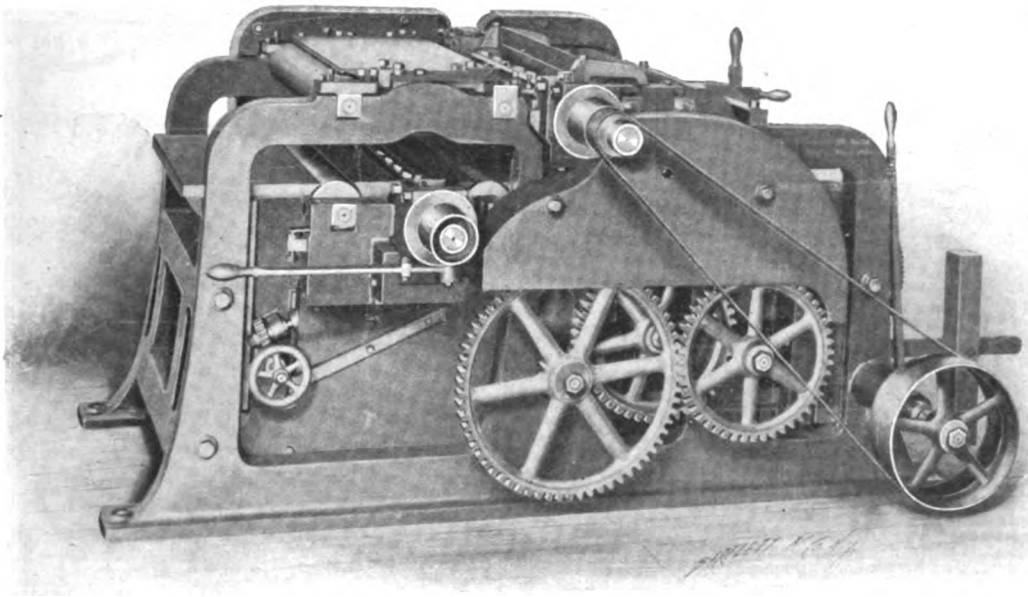
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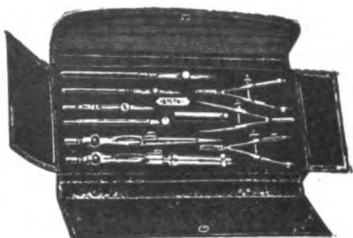


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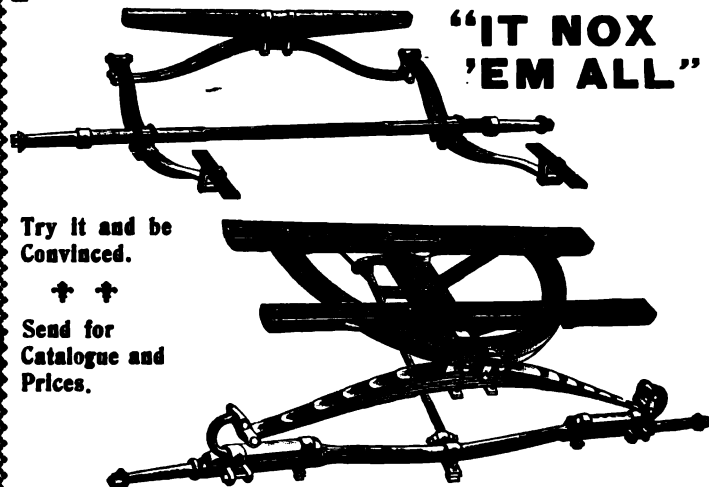
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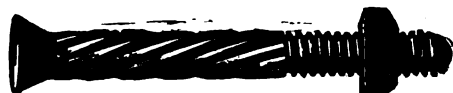
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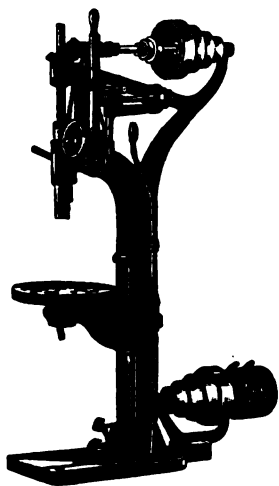
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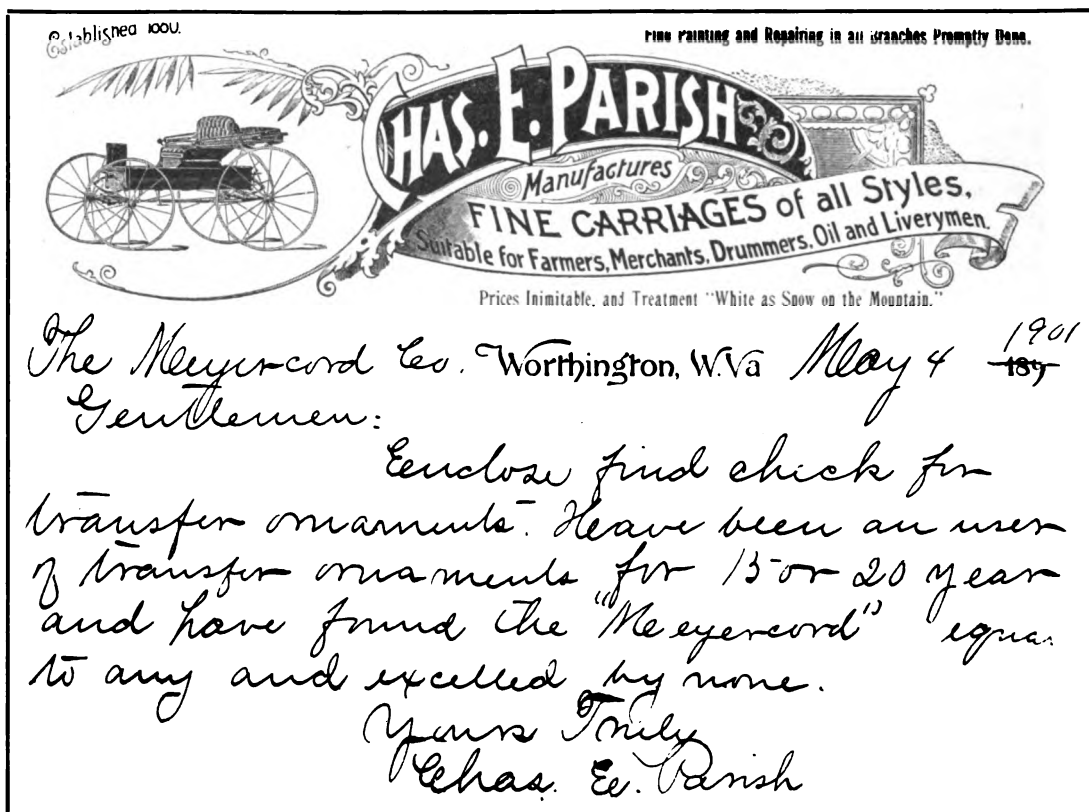
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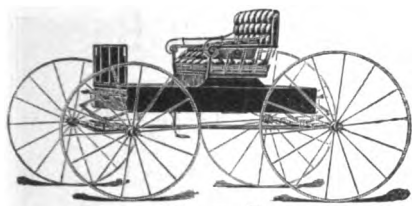
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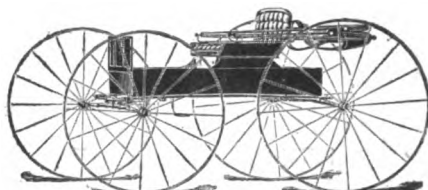
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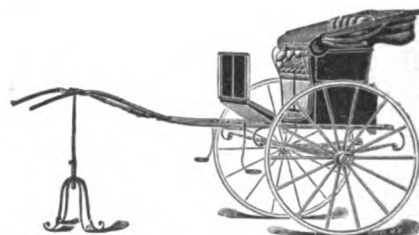
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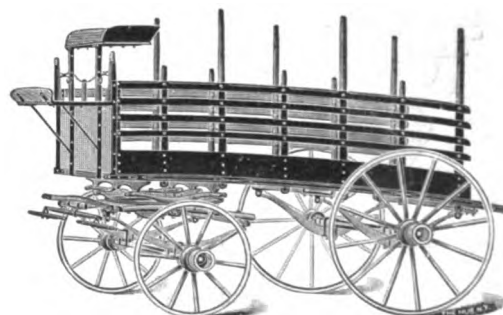
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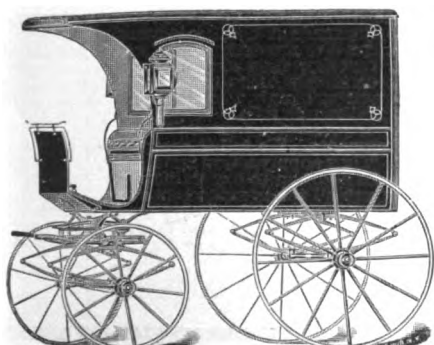
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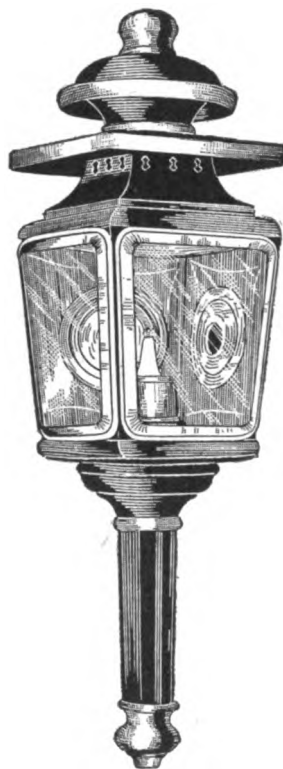
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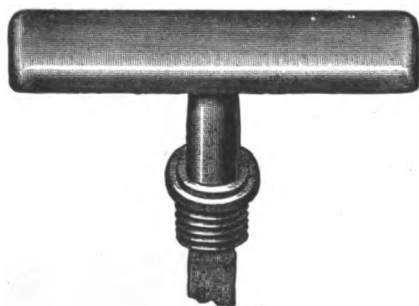
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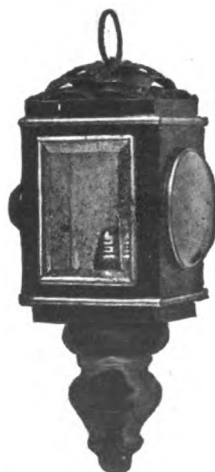
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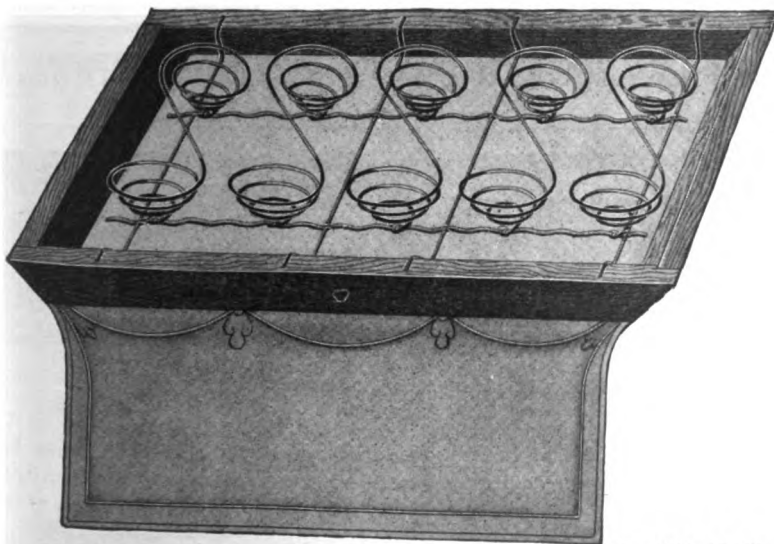
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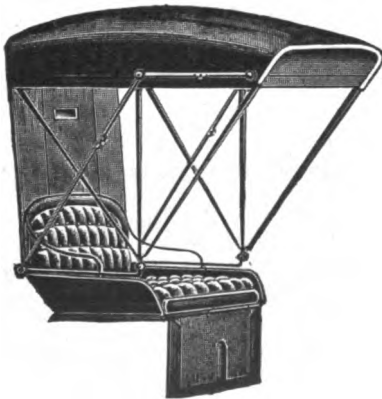
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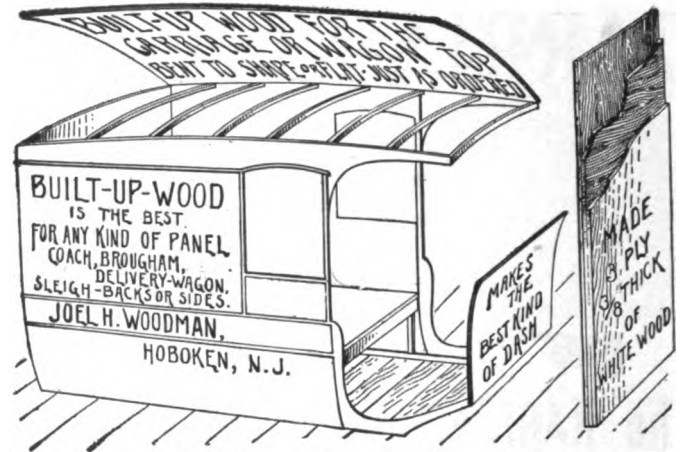
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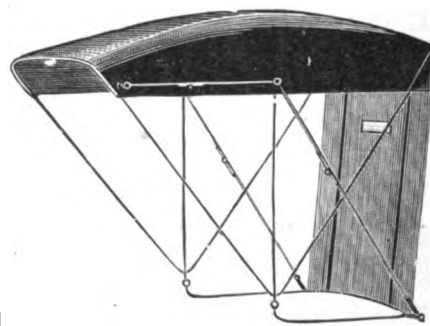
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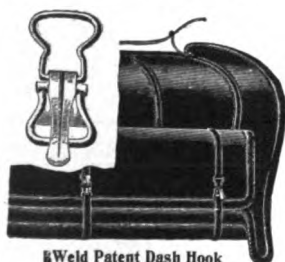
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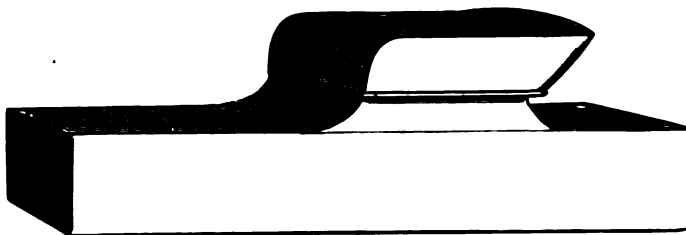




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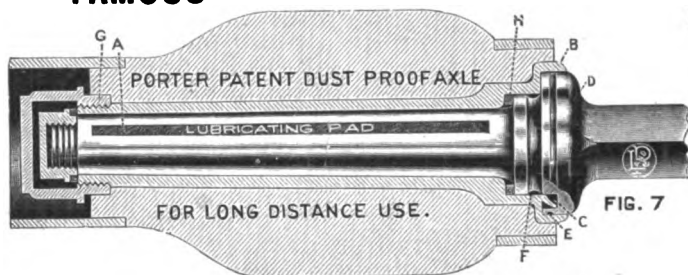
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| <b>Because</b> | unlike any other fine Carriage Varnishes, they dry hard over night; and, last, but not least, |
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Vol. XLIII.

JULY, 1901.

No. 4.

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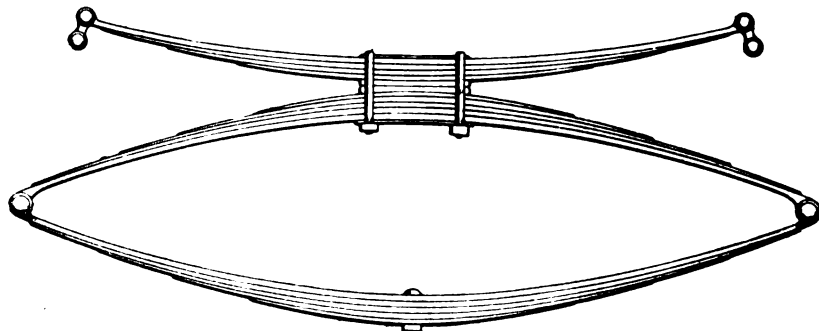
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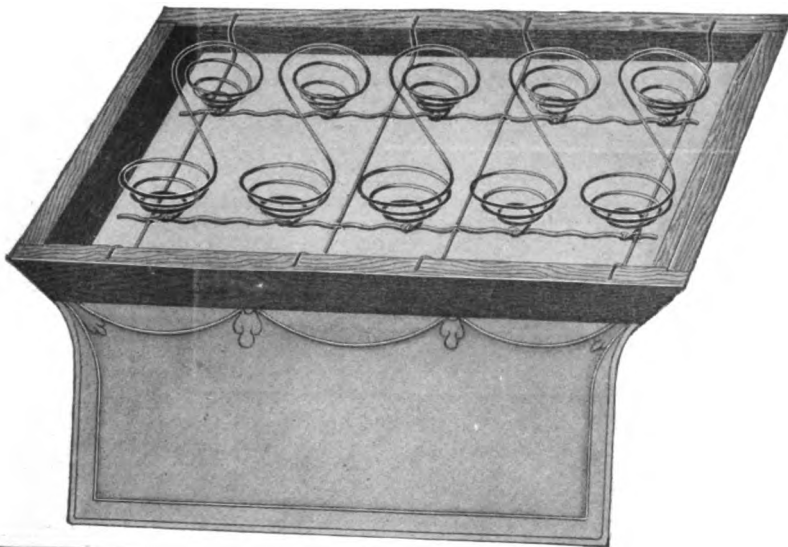
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Perfect Method can increase the output of your factory.

It can make it possible for you to turn out a greater number of carriages in a given time than you can at present.

It can enlarge the capacity of your paint shop.

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This is how Perfect Method enlarges the capacity of your paint shop:

By cutting down the time of painting each vehicle about one-third

By giving you all your painters' time for painting. They don't have to mix or manipulate Perfect Method; it reaches your shop ready for use.

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And in addition to increased output, Perfect Method also gives you better painted work—more durable and better in appearance.

Write for the Perfect Method booklet and further details.

Use The S. W. Baking Enamels on all Steel Automobile Parts.

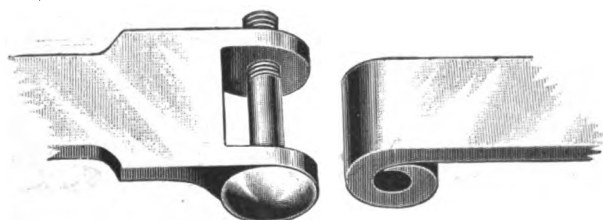
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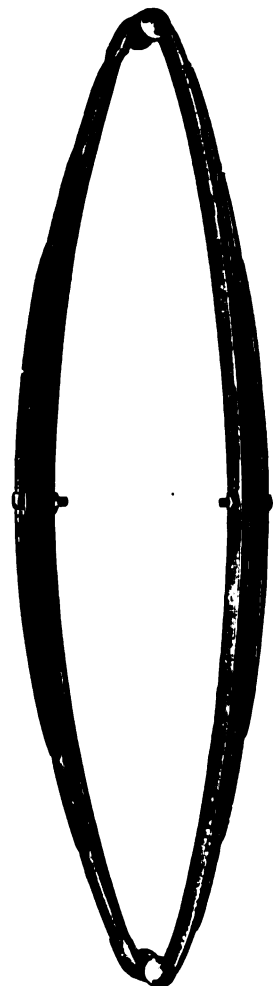
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WE CLAIM TO HAVE ATTAINED IT  
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TRY THEM AND FIND OUT FOR YOURSELF

THEY ARE

**BRILLIANT AND DURABLE**

Remarkably Free Flowing and Quick Drying

**GOOD BODY AND PALE IN COLOR**

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Makers of Fine Carriage Varnishes

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The Smaller Picture is our  
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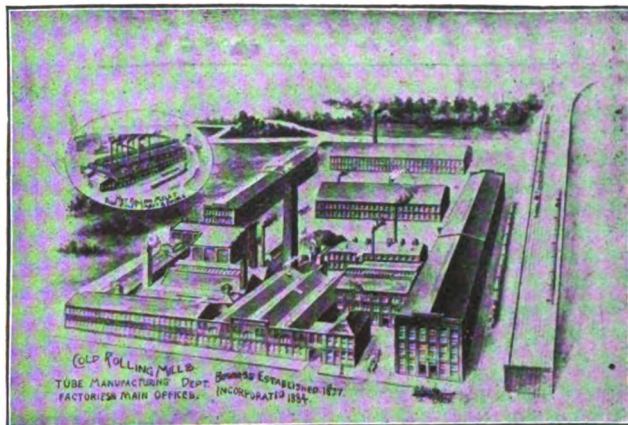
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HOT ROLLED ANNEALED AND PICKLED  
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Open-hearth, Bessemer and our own  
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COLD ROLLED for all kinds of Pressed,  
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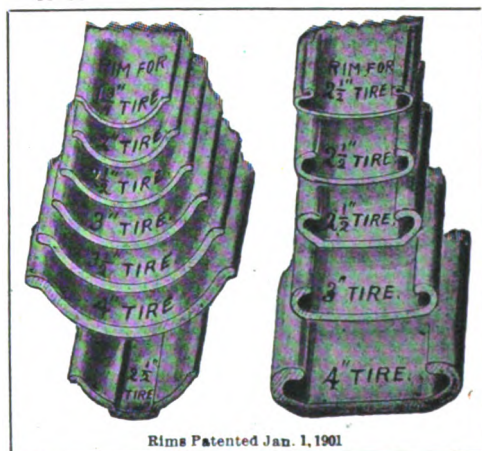
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HIGH CARBON  
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like these, and  
of other shapes  
and sizes.

Manufacturers find it unneces-  
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Rims Patented Jan. 1, 1901

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Free Flowing,  
Uniformity,  
Safety,  
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**COMPARE**

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varnishes you  
are now using  
and note the  
results

Send for Samples  
and Price List

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The Largest Varnish Works in the World.  
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LONDON.

## VARNISH.

Q. What is the most important feature of a good brand of Varnish?

A. Uniformity of product; because more of the accidents attributable to the Varnish itself are due to varying quality than to any other one cause. Some defects in a Varnish can be provided against if one be sure they are there, and that compensating good qualities are as certainly present; for instance, allowance can be made for a Varnish setting either too slowly or too quickly to exactly suit the painter, if he knows in advance just how it is going to act, so that in the former case he can give a little more time to it to avoid runs and sags, and in the latter, work with expedition in laying off, so as to show no brush marks. But if one lot of Varnish errs in one direction, and the next in another, trouble is bound to ensue.

Q. How can uniformity in a Varnish be secured?

A. By replacing the old-fashioned rule of thumb methods of manufacture by scientific processes. This means (1) painstaking, expert inspection, sorting and grading of all the raw materials, in order that they may be as uniform in quality as possible; (2) combining them, not by the haphazard way of the kitchen, but by the accurate methods of the laboratory; (3) by averaging together a great number of individual batches of one kind of Varnish in one large tank. Only manufacturers with large facilities and a large output can do this; (4) by carrying the goods a long time, and always the same length of time, in order to give proper and uniform aging.

Q. Where can such a Varnish be obtained?

A. From

**HARRISON BROS. & Co., Inc.,**

White Lead, Colors, Paints, Varnishes  
and Chemicals.

PHILADELPHIA. CHICAGO. NEW YORK. BOSTON.

**KEYSTONE PRIMER**  
FOR WOOD  AND IRON  
PREPARED EXPRESSLY FOR CARRIAGE WOODWORK

DRIES HARD & QUICKLY. WILL NOT CRACK OR SCALE. SURFACES CLOSE AND FINE.

GROUND FINE IN BEST RAW LINSEED OIL  
MANUFACTURED BY THE  
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FOR COACH, CAR  AND SAFE FILLING  
THE ONLY BLACK FILLING IN THE WORLD

DRIES HARD & QUICKLY. RUBS EASILY. SURFACES CLOSE AND FINE.

HOLDS OUT VARNISH BETTER THAN ANY OTHER FILLER.  
MANUFACTURED BY THE  
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**KEYSTONE JAPAN PASTE**  
OR GEAR  PAINT  
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DRIES HARD & QUICKLY. EASY TO SANDPAPER. SURFACES CLOSE & FINE.

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1. When you can get the same results in just **ONE-HALF THE TIME** by using Steel Wool?
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3. When you can do the same job **MORE EASILY** by using Steel Wool?

**USE  
BUY  
TRY**

# STEEL WOOL.

It cuts more quickly and more uniformly than sandpaper, does not clog or "gum up," and adapts itself readily to the shape of carvings, mouldings, etc., etc.

Steel Wool is very light, but exceedingly durable, and in corners or cornices, and on mouldings where sandpaper is used only with the greatest difficulty, labor and expense of time, Steel Wool does the work easily, with little labor, and in just one-half the time. Special Discounts to Consumers for Large Quantities. Write for Quotations.

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& Co.**

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Manufacturers of

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Varnishes and  
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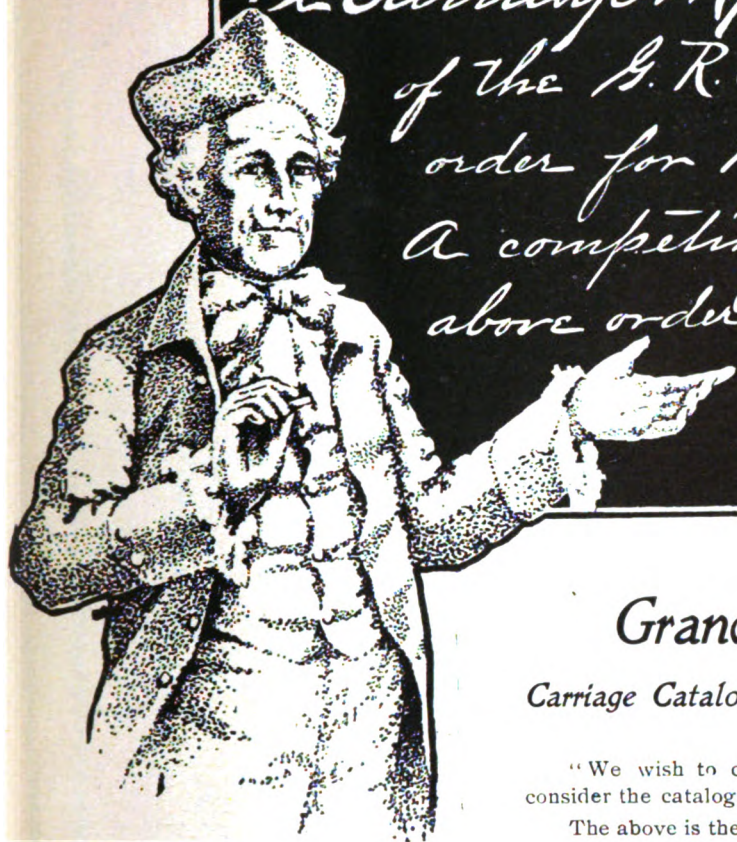
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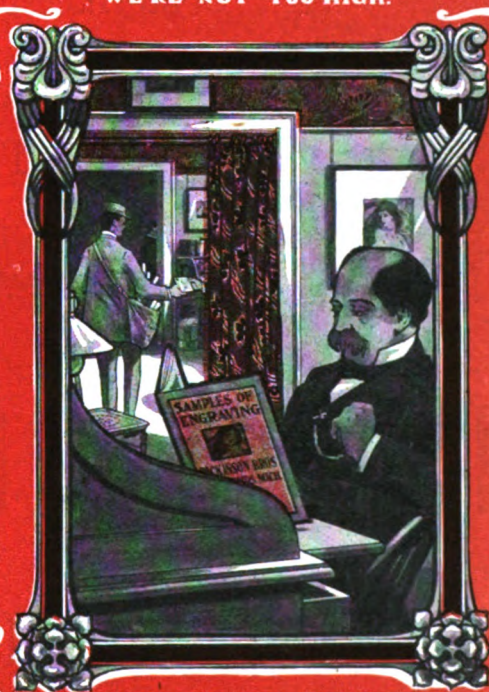
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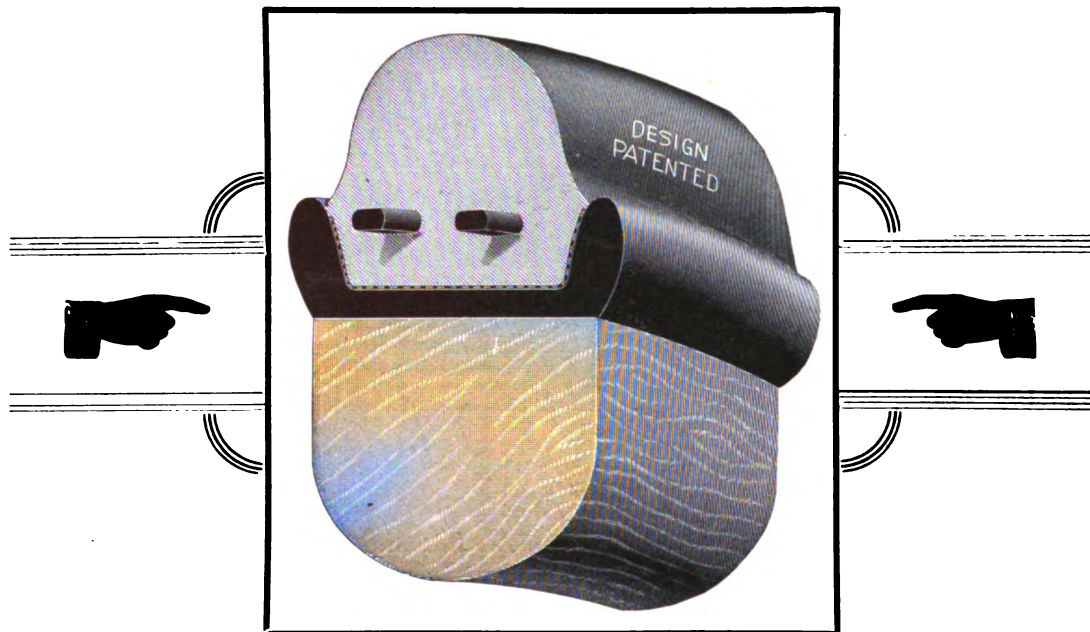
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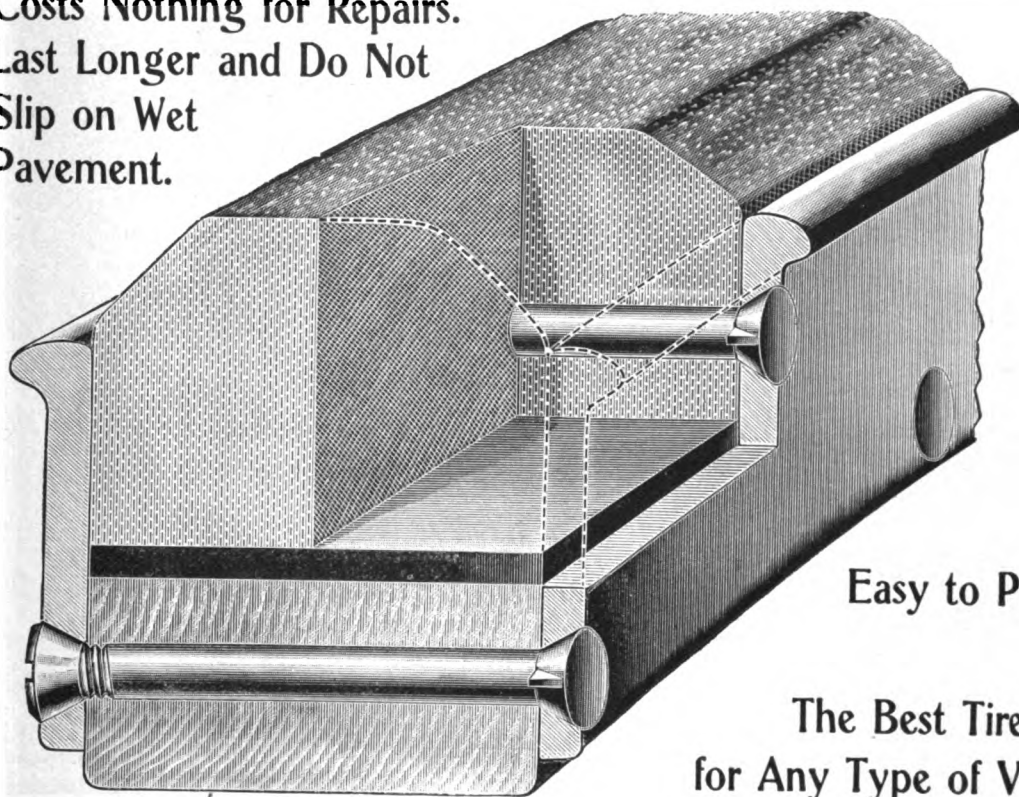
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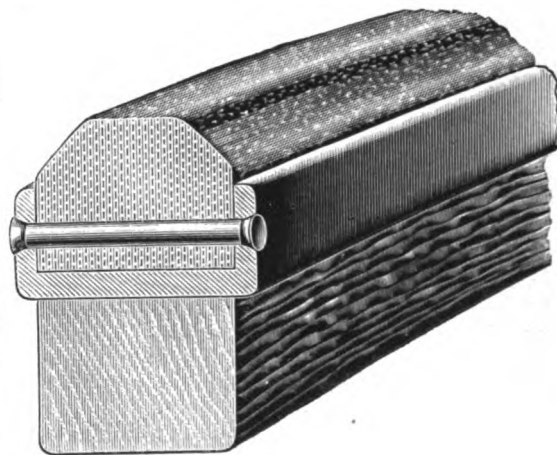
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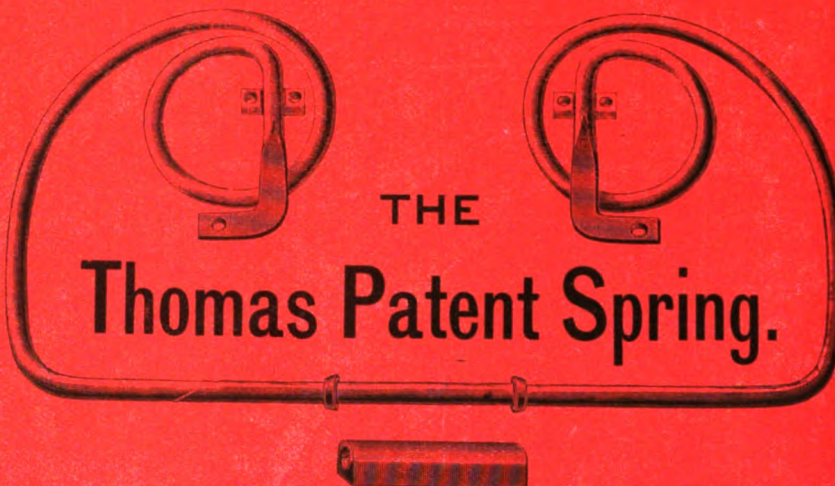


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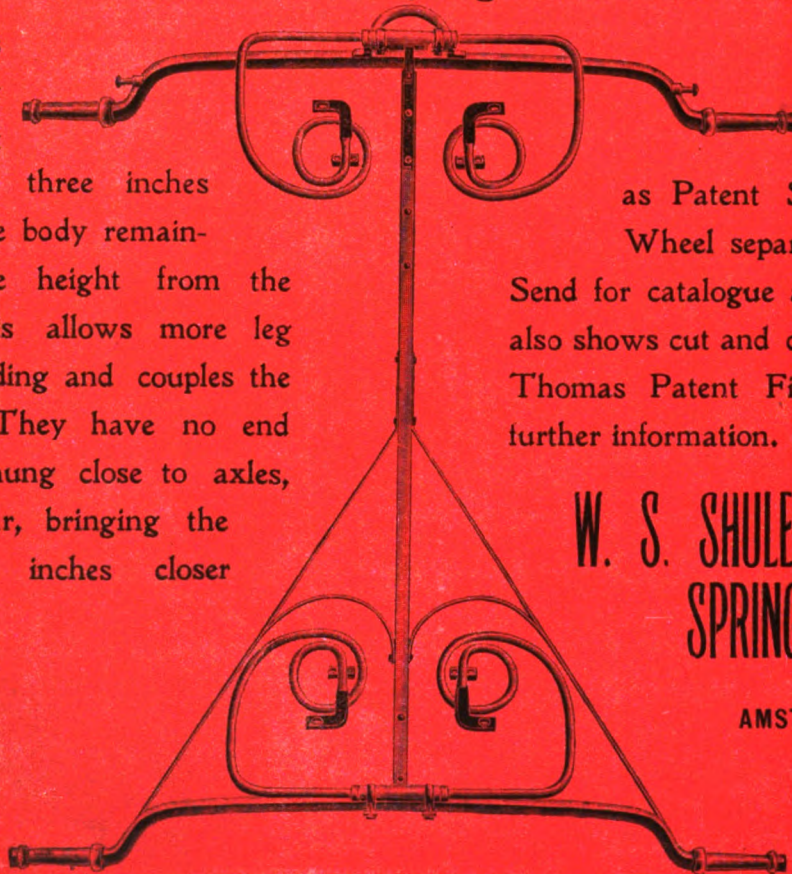
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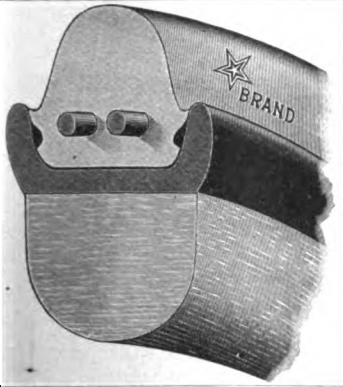
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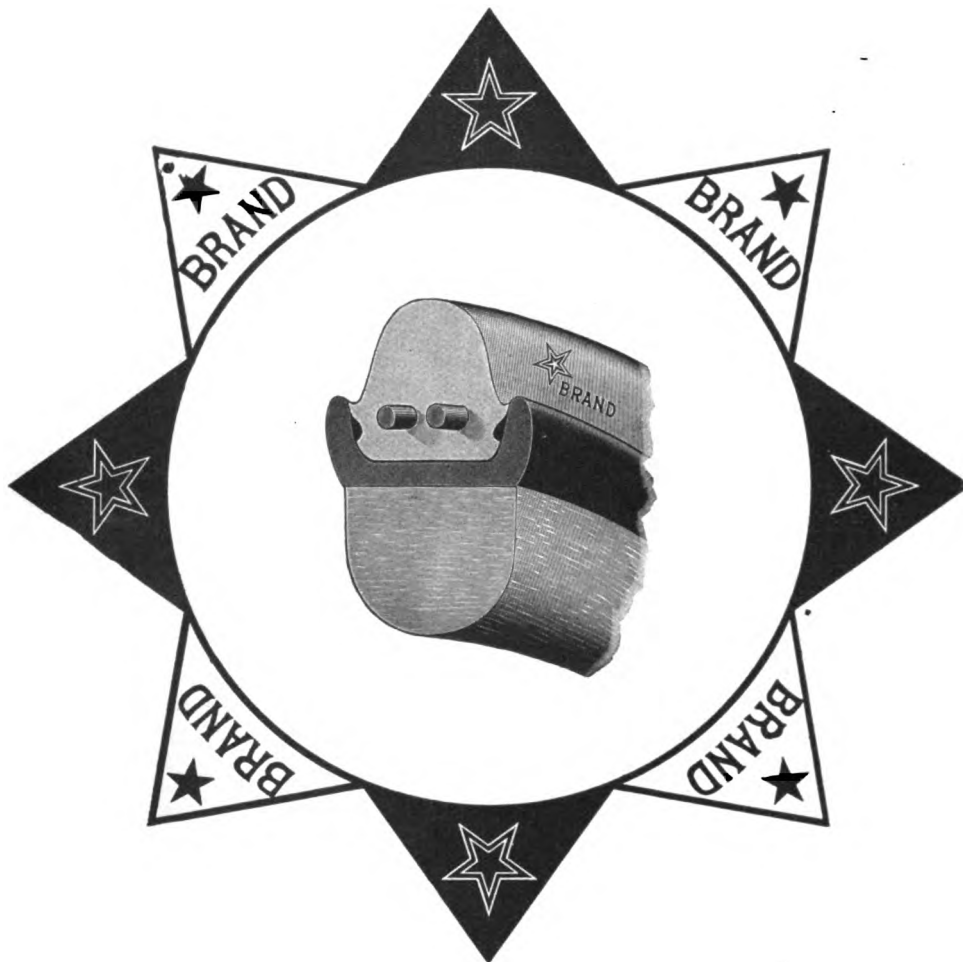
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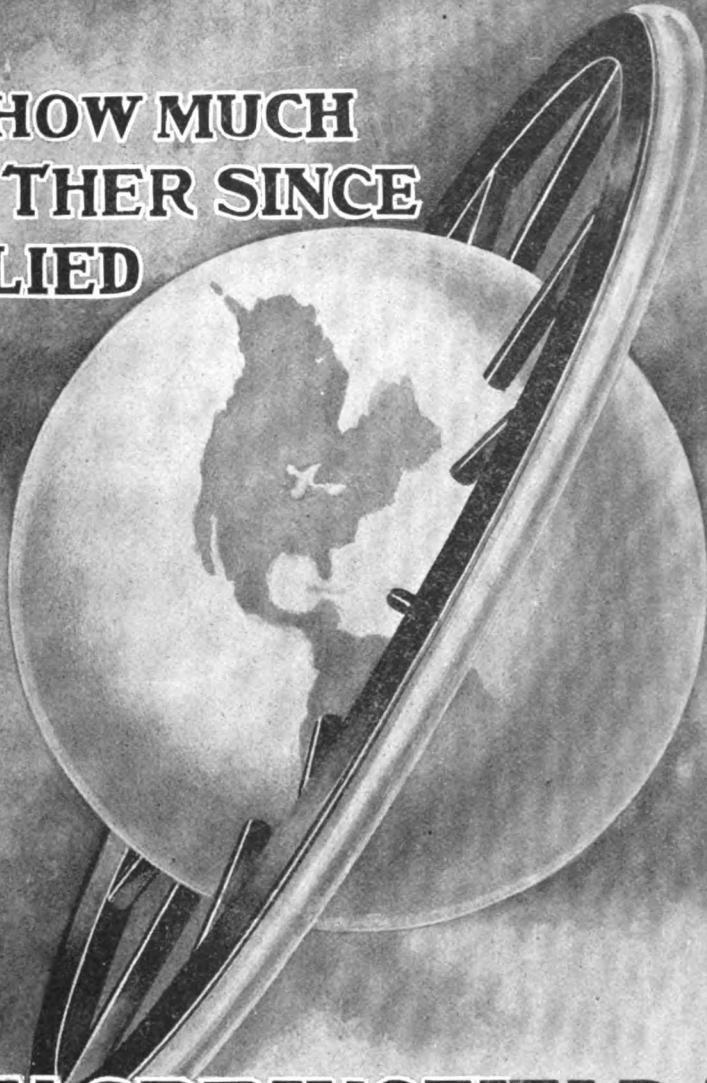
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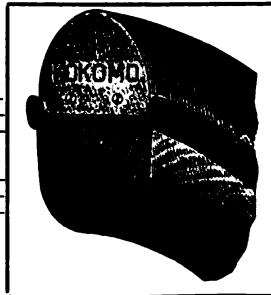
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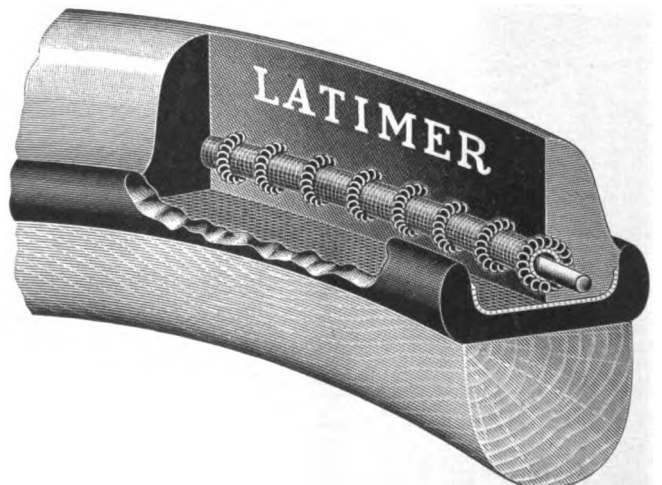
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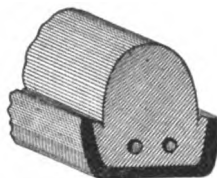
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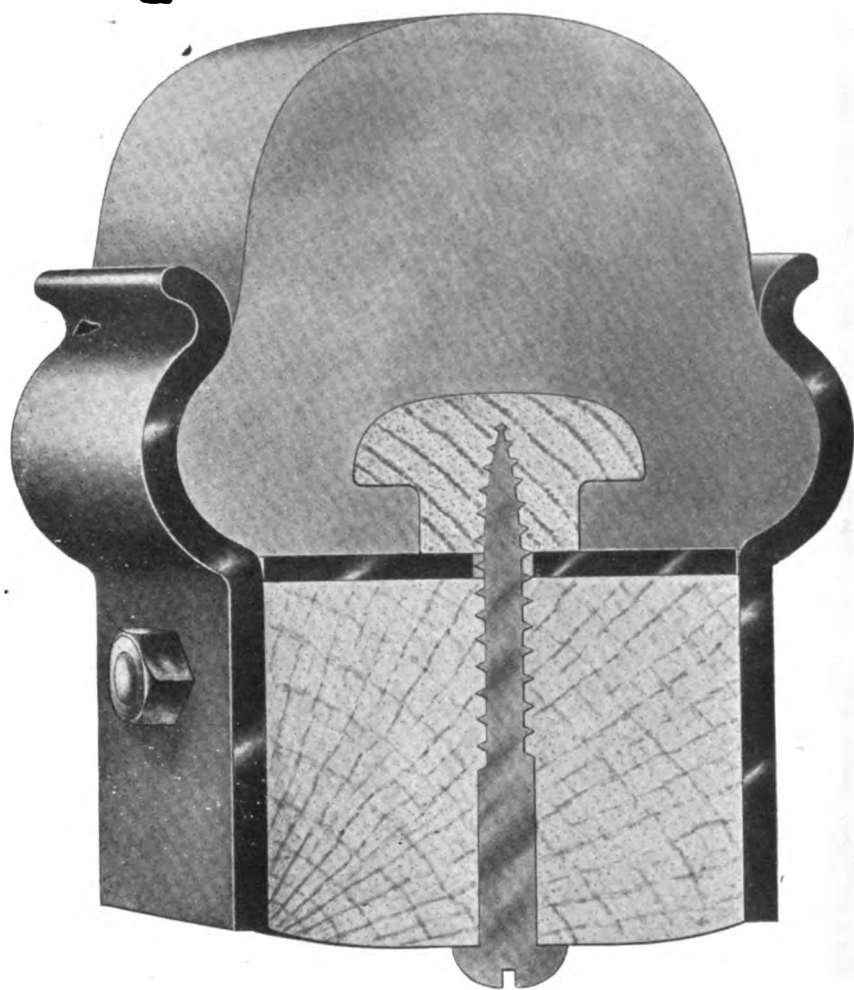
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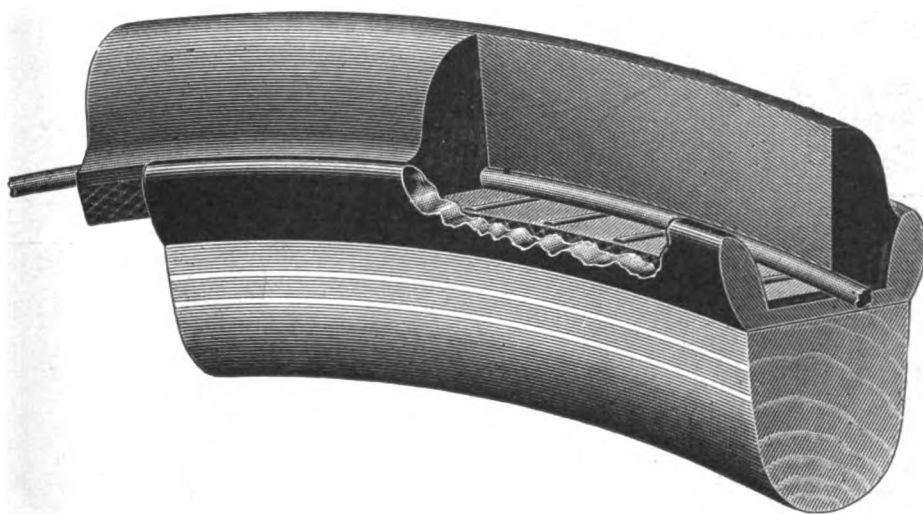


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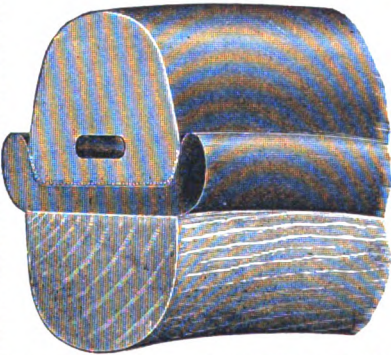
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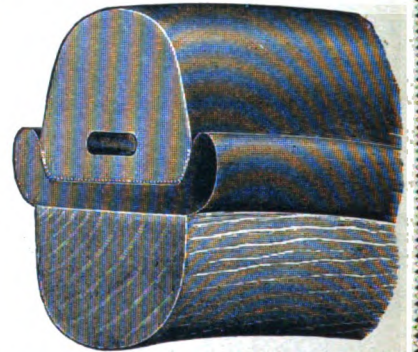
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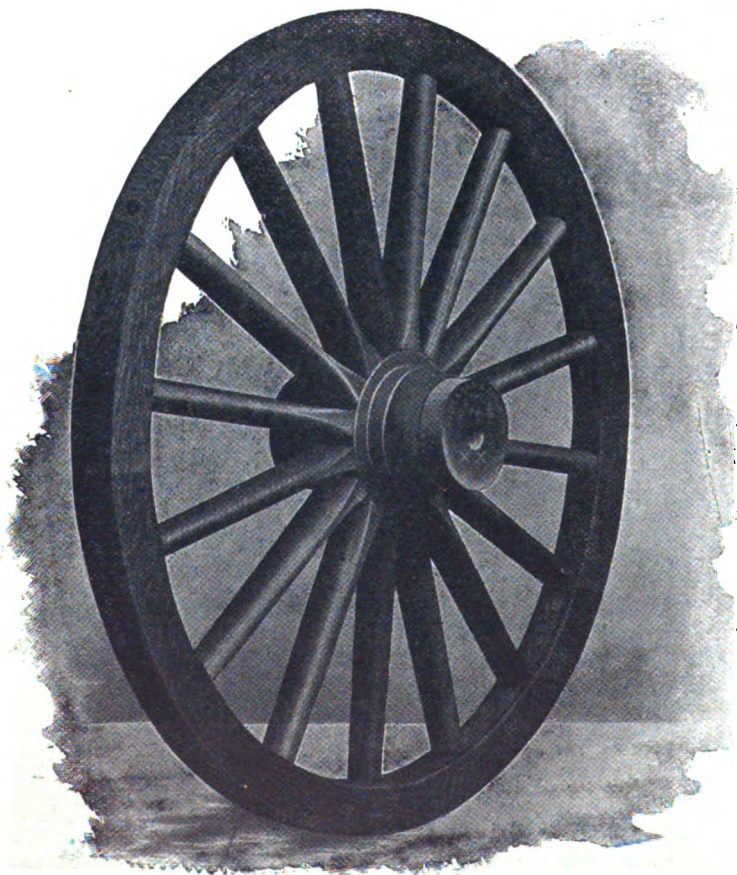
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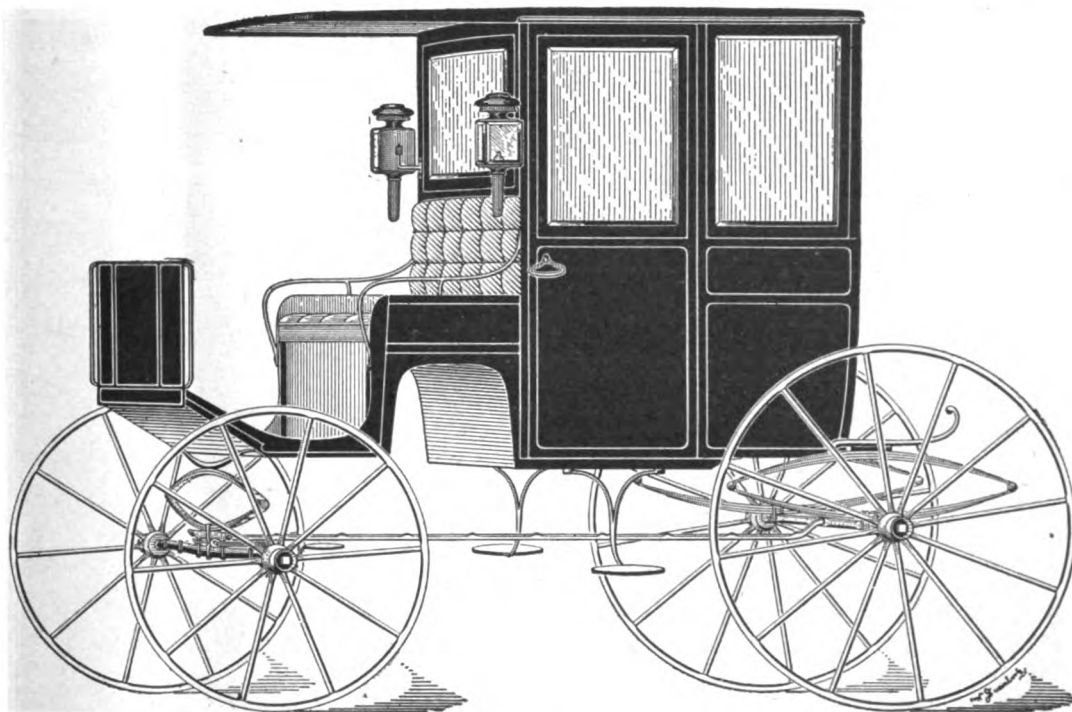
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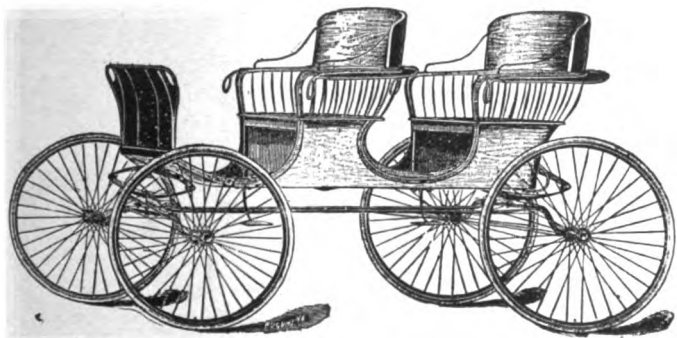


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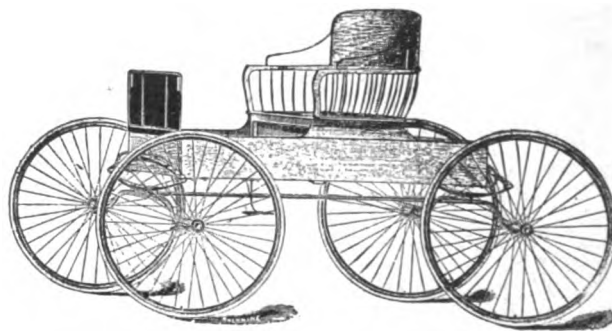
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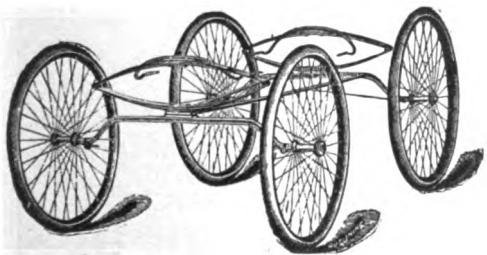
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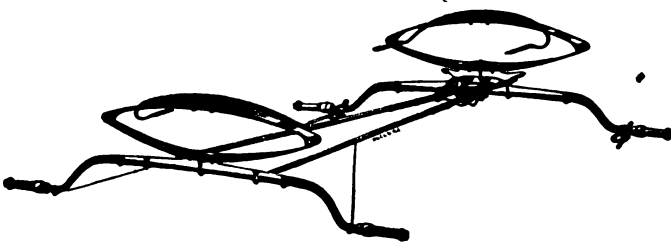
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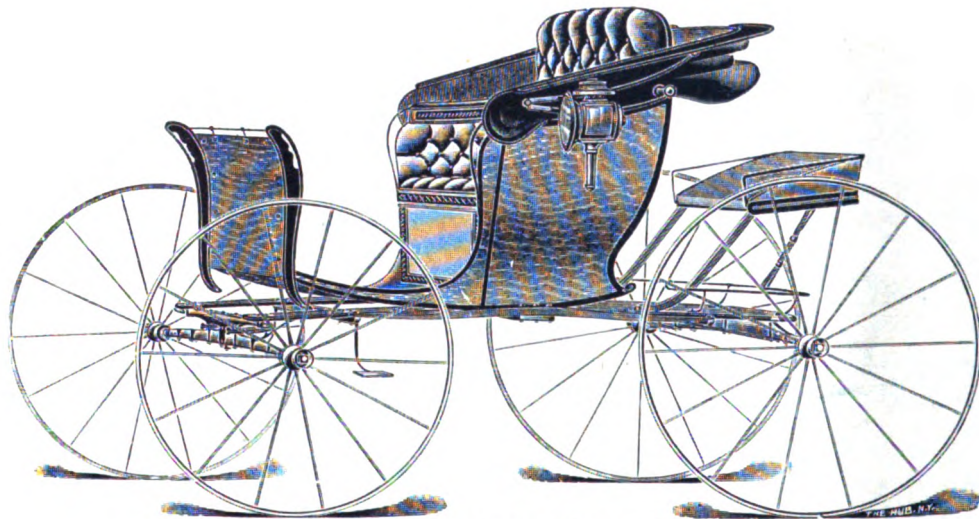
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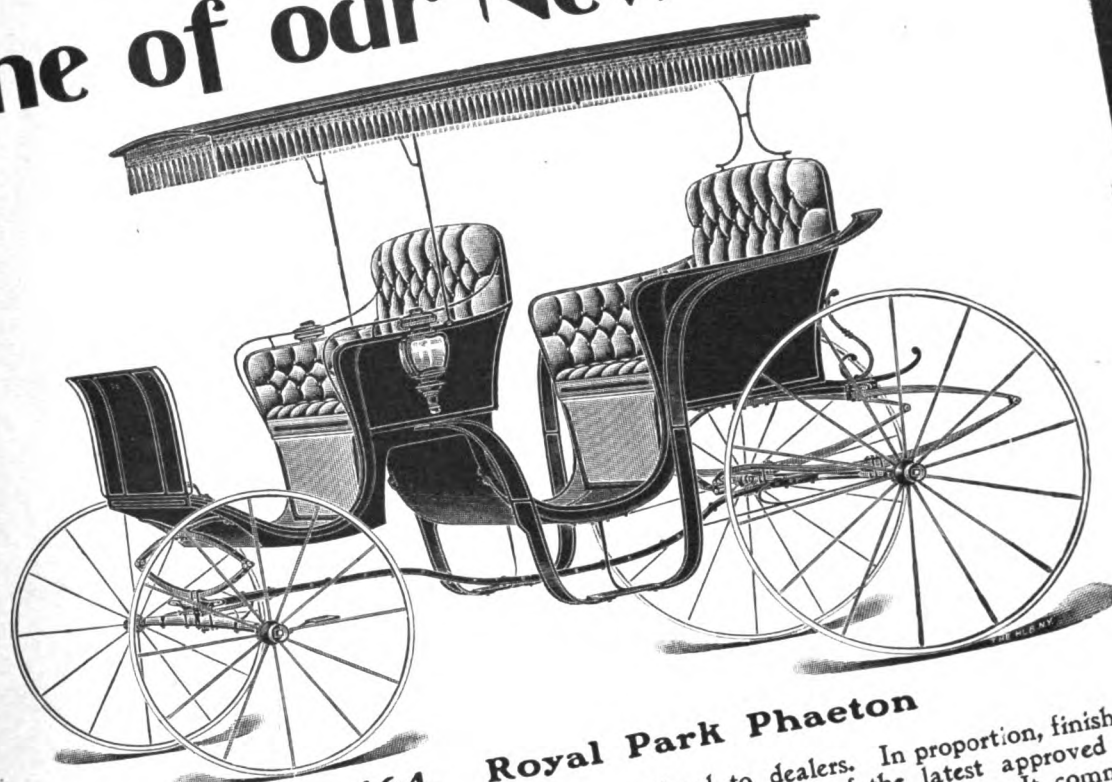
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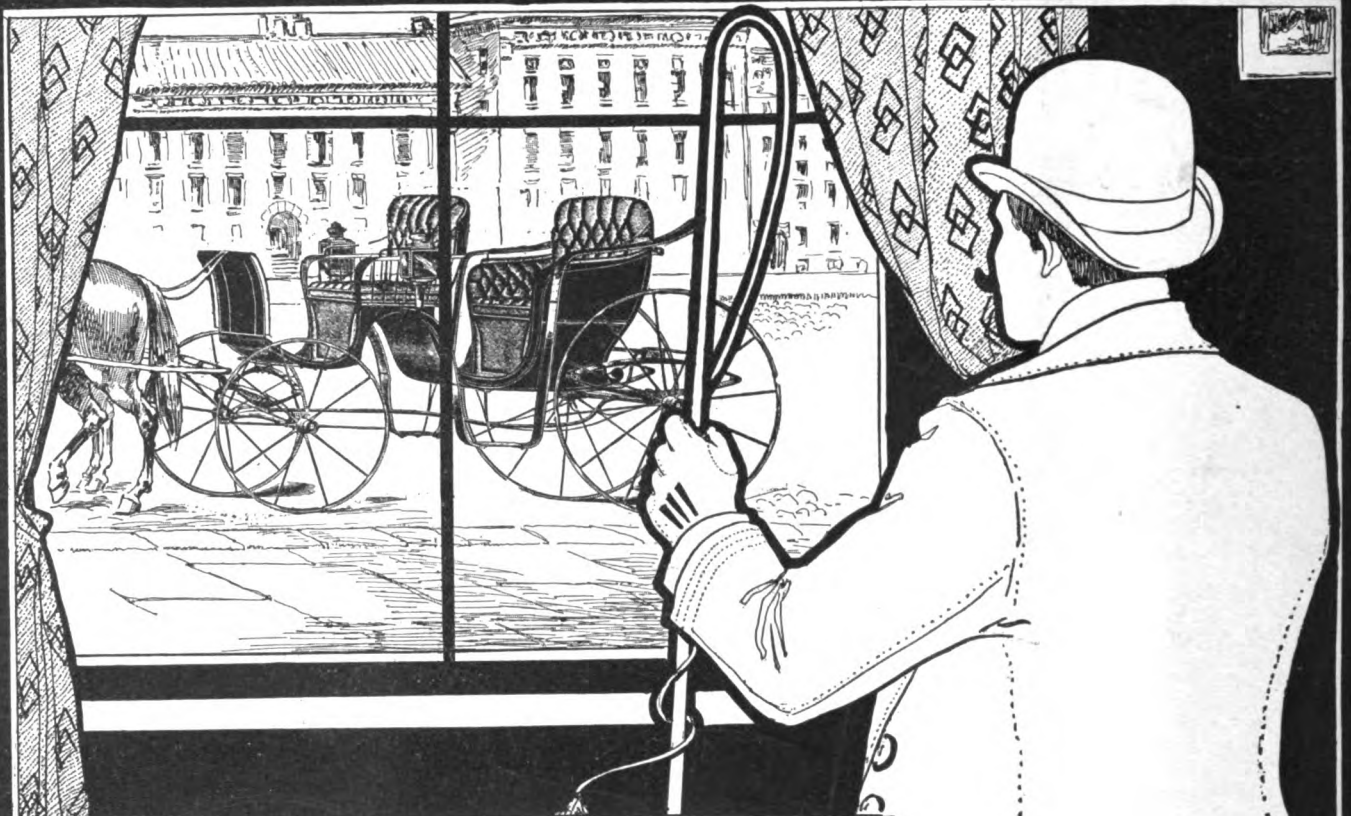
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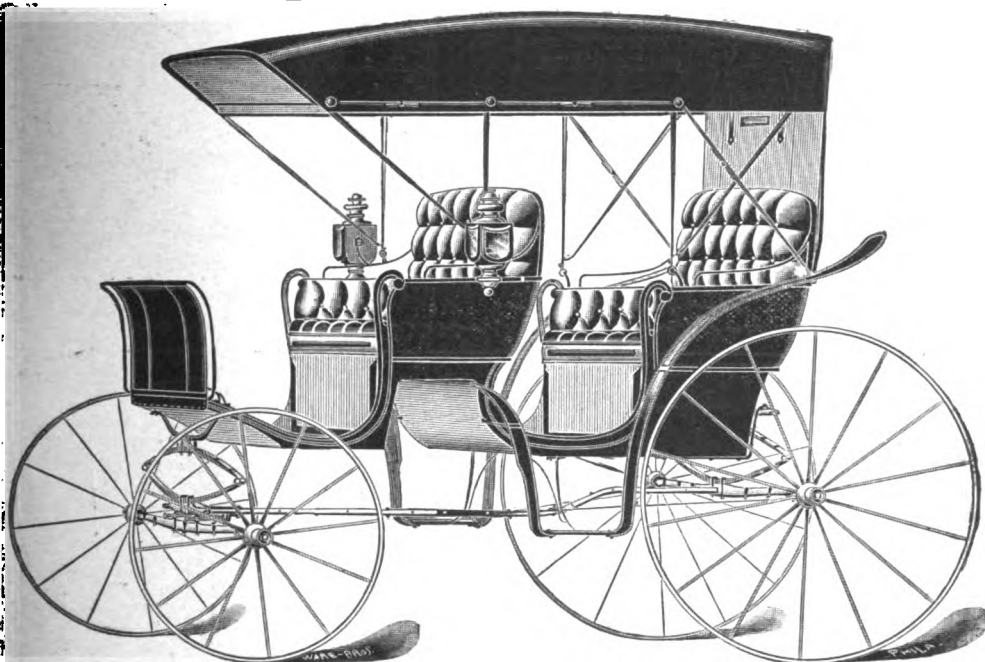


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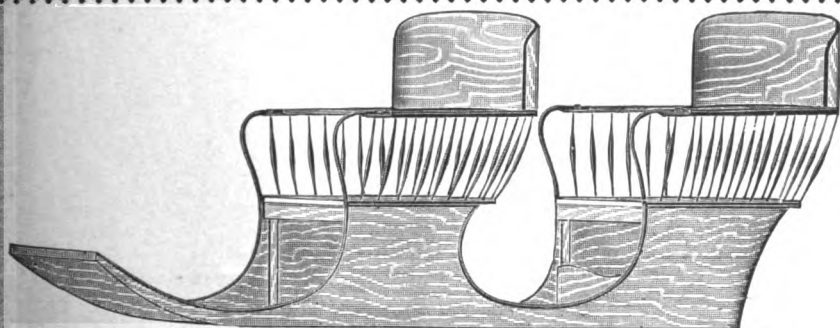
It is strictly high grade in every detail. Description appears on pages 6 and 7 of our catalogue.

The top is best brand hand buffed leather; leather curtains and leather covered bow sockets.

We would be pleased to quote price and send catalogue to dealers.

MANUFACTURED BY

THE YOUNGSTOWN GARRIAGE & WAGON CO., YOUNGSTOWN, OHIO.



THREE-QUARTER SURREY, 22½ by 63 in., . . \$9.00.  
WE BUILD THE SAME IN CUT-UNDER.

## BODIES

SURREY, TRAP, PHAETON AND BUGGY . . . . . BODIES.

PANEL, STICK AND WICKER SEATS. *في*

DELIVERY WAGONS BUILT TO YOUR SPECIFICATIONS.

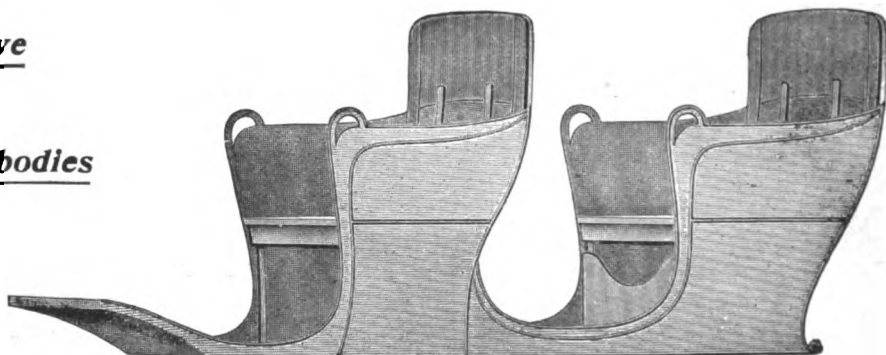
THE MILLCREEK WAGON CO., CINCINNATI, OHIO.

**BODIES! BODIES! BODIES!**

Many new and attractive designs for 1900.

A choice lot of stylish bodies always in stock.

REQUEST WILL BRING CATALOGUE AND PRICES.

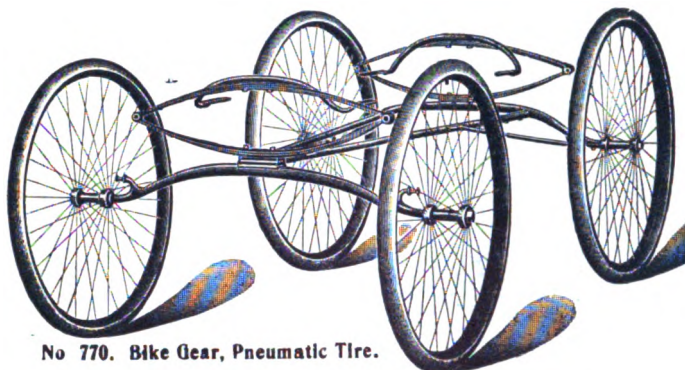


No. 153, SURREY. Price, \$10.00.

CINCINNATI PANEL CO., Cincinnati, Ohio.

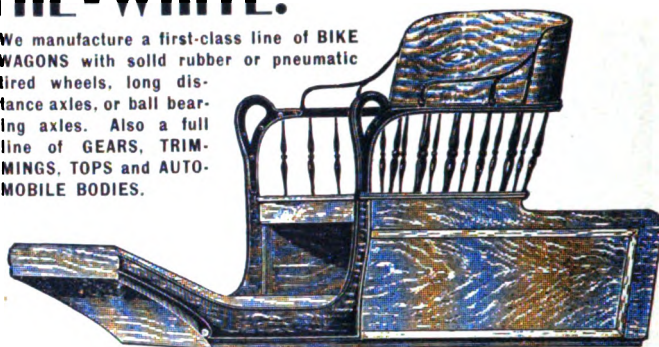
Please mention "The Hub" when you write.



**SCHUBERT'S WAGONS IN-THE-WHITE.**

No 770. Bike Gear, Pneumatic Tire.

We manufacture a first-class line of BIKE WAGONS with solid rubber or pneumatic tired wheels, long distance axles, or ball bearing axles. Also a full line of GEARS, TRIMMINGS, TOPS and AUTO-MOBILE BODIES.



AUTOMOBILE BODY.

**SCHUBERT BROS. GEAR COMPANY, ONEIDA, N. Y., U. S. A.**

**63 BEAUTIFUL STYLES.**

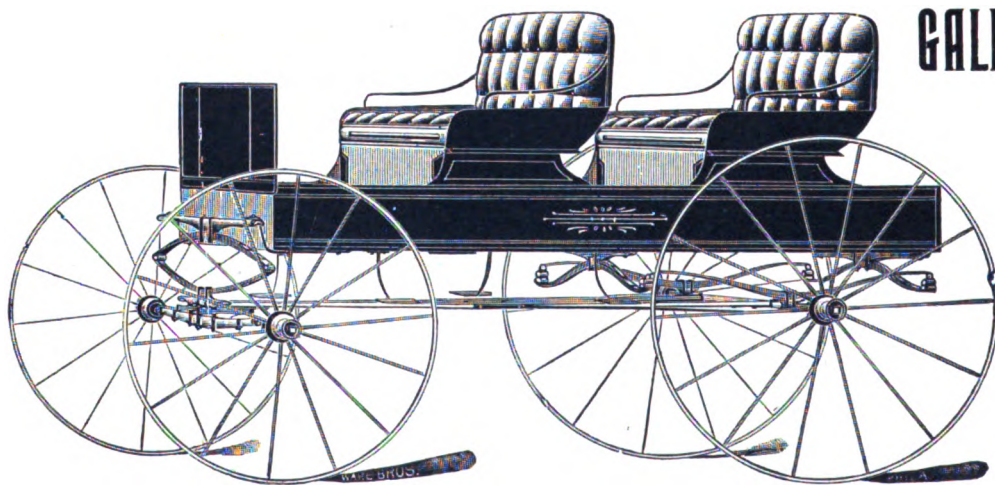
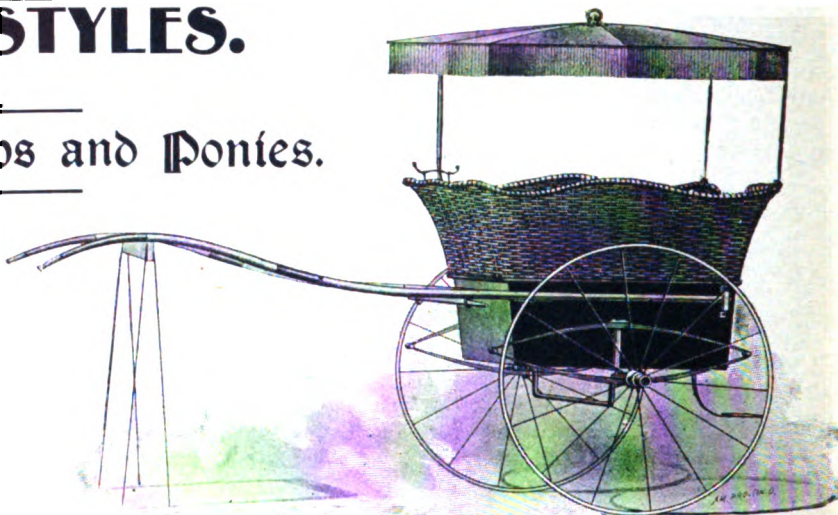
**Swell "Rigs" for Swell Cobs and Ponies.**

Send for new and beautifully illustrated catalogue No. 14 of up-to-date novelties and quick-selling profit makers. \* \* \*

**Walborn & Riker,**

PRIZE BUILDERS,

St. Paris, Ohio, U. S. A.



**GALION WAGON & GEAR CO.**

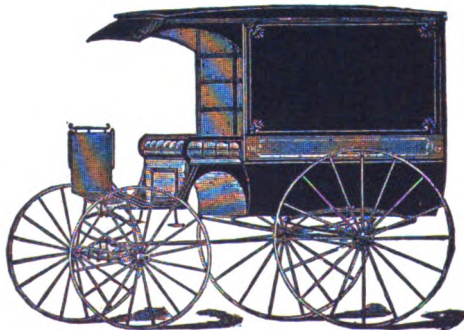
GALION, O.

**MOST COMPLETE  
WAGON AND GEAR  
FACTORY ON EARTH.**

**DID YOU  
SEE OUR LINE AT  
CINCINNATI?**

**Best in the Market**

We build  
Honest Wagons  
at  
Honest Prices.



No. 35

The  
Quality  
of our work is  
Guaranteed.

.... WRITE FOR OUR ILLUSTRATED FORM N. CATALOGUE AND PRICE LIST. ....

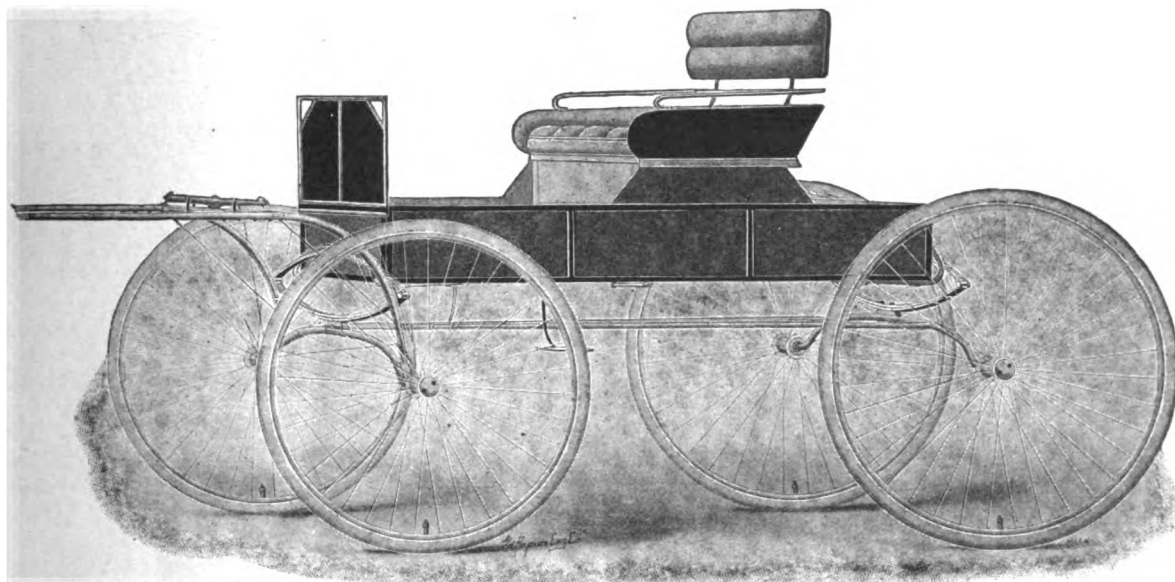
**THE O. ARMLEDER CO.**

**Cincinnati, Ohio.**

Please mention "The Hub" when you write.



# No. 133 RUBINSTEIN.



The Latest Idea In a Pneumatic Wagon, Embracing The New Style Beverly Body and Seat.

**No. 133 Rubinstein Wagon.**

No. 133 represents the latest idea in a pneumatic wagon, embracing the new style Beverly body and seat. In the manufacture of this wagon we have given attention to the smallest details, not only in the selection of material of the very best quality, but in the rounding out and finishing; making in the end the truly finished piece of work.

This wagon is of the proper proportion and without fault or blemish.

WRITE AND GET FULL DESCRIPTION.














**THE RICHLAND VEHICLE CO.,** Mansfield, Ohio,  
U. S. A.

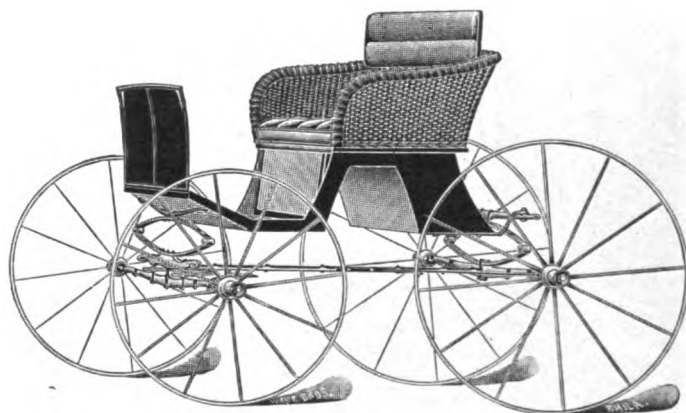
## J. T. Clarkson & Co.,

AMESBURY, MASS.,

MANUFACTURERS OF

## Traps and Pony Vehicles IN VARIETY.

The Princess Pony Phaeton is one of our attractive styles. We build the celebrated Maplewood Carts for domestic use and export. Cuts and prices on application.             



### INEXPENSIVE, SERVICEABLE, CONVENIENT.

Just the "Trick" for all kinds of General Hauling. Carriages, Cotton, Hardware, Feed, Baggage, Machinery, etc., etc. Made in 3 styles, several sizes; tilting seat; also furnished with removable 10 inch sides and ends. Light enough for one horse; strong enough for two-horse loads. Platform stands 36 inches from ground and clears the wheels. Write for particulars and prices.

**AUBURN WAGON CO.,** Martinsburg, W. Va.  
BUILDERS OF FARM AND TEAM WAGONS.

A special rebate will be allowed those who mention THE HUB in writing.



## EXPORT TRADE!

DOES IT INTEREST YOU? ARE YOU LOOKING FOR IT?

If so you should have a card in THE HUB, as it has subscribers in every country in the world where carriages are used. Write for our card of rates.

**TRADE NEWS PUBLISHING CO., 24-26 Murray Street, New York.**

Please mention "The Hub" when you write.

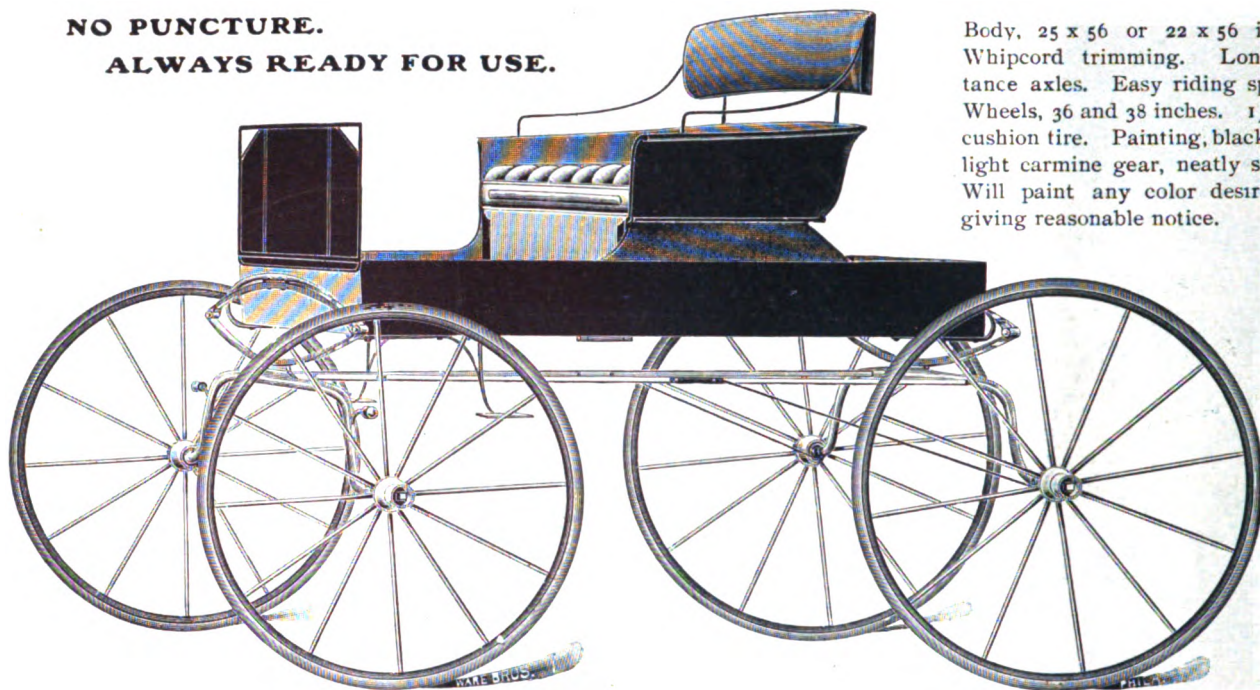


**THE BEST**

Good Material and Fine Workmanship are what we claim for every job manufactured by us.

NO PUNCTURE.

ALWAYS READY FOR USE.



Body, 25 x 56 or 22 x 56 inches. Whipcord trimming. Long distance axles. Easy riding springs. Wheels, 36 and 38 inches. 1 1/4 inch cushion tire. Painting, black body, light carmine gear, neatly striped. Will paint any color desired by giving reasonable notice.

No. 49. MONTCLAIR RUNABOUT.

Send for Catalogue and Price List.

**BIRDSALL, WAITE & PERRY MFG. CO.,** WHITNEY'S POINT, N. Y.

SHORT &amp; MILBURN, 1665 Broadway, New York, Eastern Sales Agents.

## Redding's Harness and Saddlery Directory

SEVENTH YEAR.

**R**EDDING'S HARNESS AND SADDLERY DIRECTORY for 1901 contains some new and valuable features and is an up-to-date twentieth century publication. This directory has **always** been the **standard**, and every edition has been an advance in accuracy and usefulness over the preceding issue.

The 1901 edition has a **new arrangement** of the **wholesale** and **jobbing trade** that makes it very convenient for those who wish to separate *association jobbers* from those not at present so recognized.

A **new part** has been added that will be found a very serviceable list of **dealers in harness**, as distinguished from *retail harness* manufacturers. To many who solicit the vehicle, implement and hardware trade, as well as department stores, this will prove of great convenience. These trades are handling harness and horse goods in increasing volume yearly, and such a list is a distinct advantage to the trade.

**The Buyer's Guide** (Part III. of the Directory) has always been a valuable feature. This is an alphabetical classification of all the many and various articles made to sell to the trade from Axle Grease, under "A," down to and including Wool Saddle Linings under "W," and the names and addresses of those making the various articles.

As the export trade is now inviting attention, a list of exporters of saddlery is also published.

The body and the bulk of the Directory is, of course, made up of the **retail harness makers of the country**. They are conveniently arranged under State, Town and County, in the larger cities giving the street number of the occupant's place of business. Those whose rating (approximate) is over \$1,000, are marked so as to be easily distinguished.

The 1901 edition is nearly exhausted, and those desiring copies should send \$2.00 at once to

**Trade News Publishing Company.**

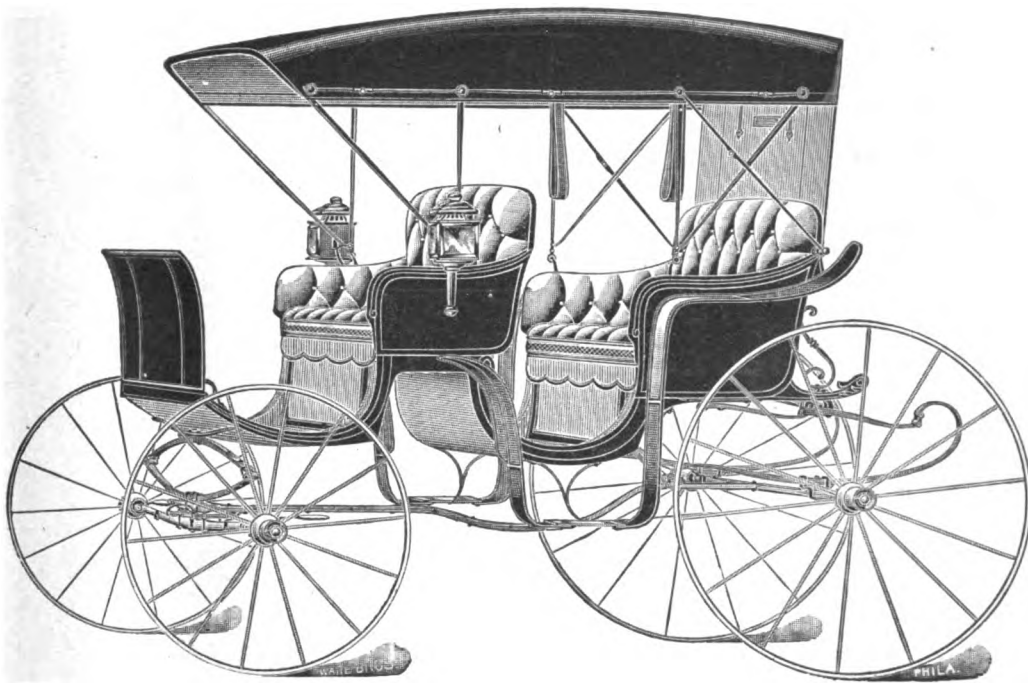
24-26 MURRAY STREET, NEW YORK.



# BLEES-McVICKER CARRIAGE CO.,

Manufacturers of FINE VEHICLES.

STYLE,  
QUALITY,  
WORKMAN-  
SHIP.



No. 140 CARRIAGE.

It Will  
Pay You to  
Investigate  
•  
WRITE FOR  
CATALOGUE.

MACON, MISSOURI.

Our Way



SHORT - CUT

MILL TO RETAIL

Wool Square Horse Blankets

FROM MILL DIRECT TO RETAILER.



Wool Carriage Robes

Profitable Line

"Easy to sell as Nails."

NORTHERN OHIO BLANKET MILLS

THE BECKMAN CO.  
CLEVELAND, OHIO

Others' Way



SELLING AGENCIES

CHAS. G. JOHNSTON, 281 Madison, Chicago  
F. M. LETTS, 31 North Sixth, Philadelphia.

E. L. BOWLES, 72 Warren, New York.  
McINTIRE & CHANDLER, 97 Portland, Boston.



**WIRE  
WHEELS**

**IN**

**ALL  
STANDARD**

**SIZES  
WITH**

**STRAIGHT  
OR**

**HOOK  
SPOKES.**

**HIGHEST  
GRADE.**

**P  
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**R**

**Pneumatic  
Carriage  
Tires**

**FURNISHED  
IN**

**HIGH  
GRADE  
ONLY.**

**“THE  
BEST  
IS  
NONE  
TOO  
GOOD.”**

**MANUFACTURING CO.,**

**HARTFORD, CONN.**



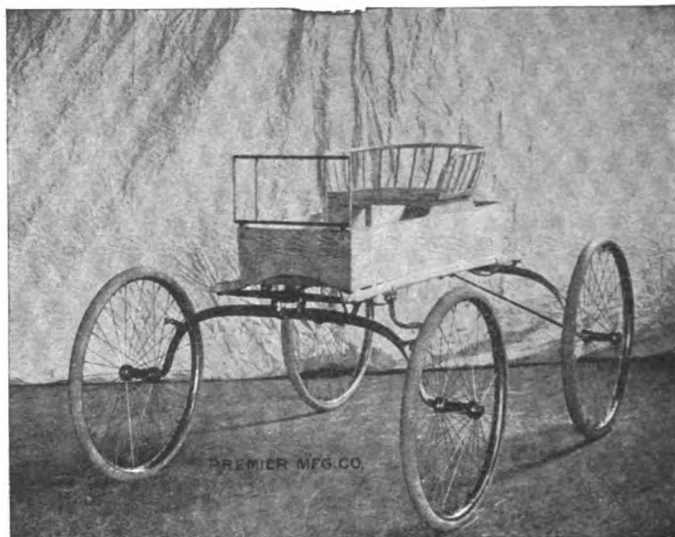
Two  
"Premiers"

WIRE  
WHEELS  
32 x 1½ in. TIRES  
AND  
TUBULAR  
AXLE.



PREMIER  
ROAD CART

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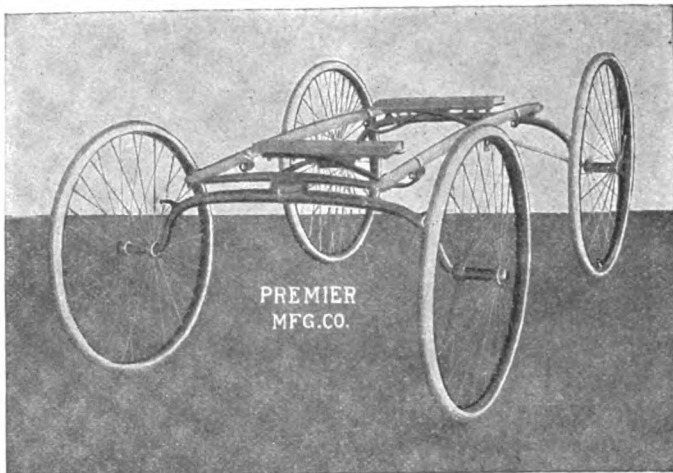


One Passenger  
Premier Wagon

SOLD ONLY  
IN THE WOOD  
AND IRON  
AND WITH SHAFTS.  
GUARANTEED  
TO  
SAFELY  
CARRY  
250 POUNDS  
AT ANY  
SPEED.

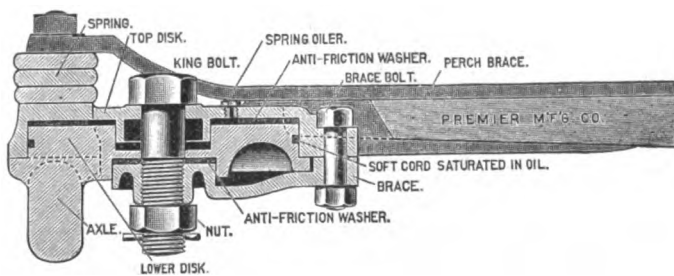
MANUFACTURING CO.,  
HARTFORD, CONN.





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THE  
PREMIER  
TUBULAR  
GEAR  
STANDS  
WITHOUT  
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PEER



IF YOU  
HAVE  
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BAILEY  
FIFTH  
WHEEL  
YOU  
HAVE  
THE  
BEST

MANUFACTURING CO.,  
HARTFORD, CONN.



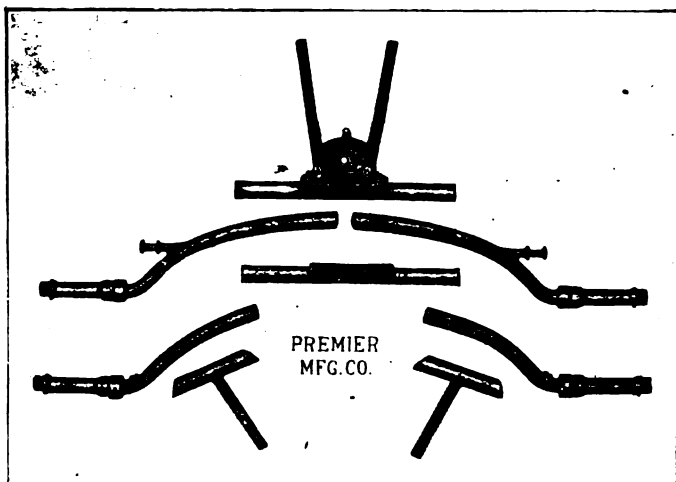


Ball  
Bearing  
Bushings  
For  
Wood  
Wheels.

Crescent  
Steel  
Rims.

Flat  
Base  
Steel  
Rims.

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PREMIER  
AXLES  
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PAR  
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PREMIER  
PRODUCTS=  
PERFECTED  
PROVED AND  
PREFERRED.

MANUFACTURING CO.,  
HARTFORD, CONN.





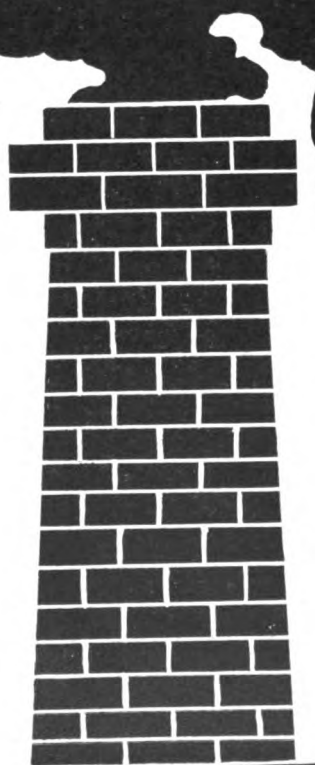
*Fires start  
Sep. 1<sup>st</sup>*

*The Cleveland-Canton  
Spring Co.*

*Canton, Ohio.*

*High Grade, Hand Made  
Oil Tempered  
Springs*

*It will pay you to  
see us before  
making contract.*



CHARLES AUSTIN BATES N. Y.



*We can save you money.....*

# Carriage Lamps

*of the finest quality, also medium and  
low priced goods.*

WE MAKE  
LAMPS  
FOR EVERY  
KIND OF  
VEHICLES.

NEW STYLES  
BEING  
CONSTANTLY  
INTRODUCED.



OUR FACILITIES  
UNEXCELLED.

# Carriage Lamps

*of the finest quality, also medium and  
low priced goods.*

## Richmond, Ind., Mfg. Co.

RICHMOND, IND.



# Bailey Spring

---

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## Important Developments

S. R. Bailey & Co., Amesbury, Mass., find it necessary to delay putting their spring on the market for a short time, and crave the indulgence of the trade until they have perfected important developments in its construction which will greatly improve it. Announcement next month.

# BULL-DOG

Shaft Shackles SATISFY.

S. R. BAILEY & CO.     -     -     -     -     Amesbury, Mass.



# The Picturesque Route



of America  
Between East and West.  
New York, Buffalo, Niagara Falls,  
Cleveland, Cincinnati, Chicago.

## Big Four

The  
'Buffalo  
Route'

to

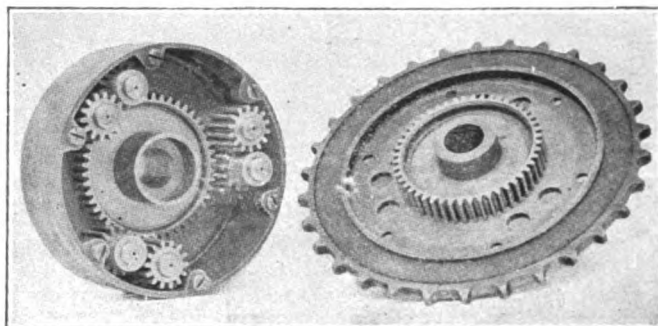


# SPUR EQUALIZERS

For All Types of Automobiles.

SUPERIOR TO BEVELS IN THE FOLLOWING RESPECTS

*No end thrust. No thrust collars to wear.  
No looseness to adjust. No great friction.  
No loss of power. Dust Proof, oil Tight Cases.  
Cheaper and more efficient.*



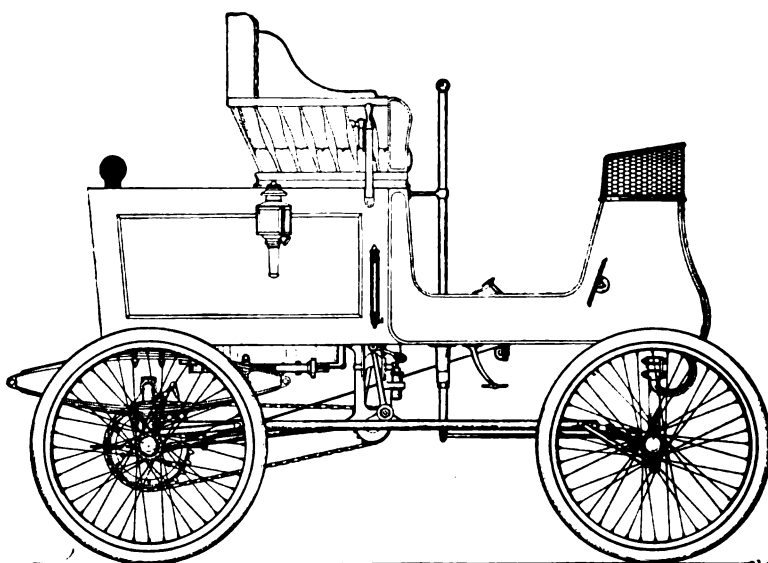
Illustrating Models 1, 2 and 6 (different in size only).

Special Gears and Sprockets to Order.

*Carriage Manufacturers entering the Automobile business  
specially invited to write for further information.*

## BROWN-LIPE GEAR CO.,

212 S. GEDDES ST., SYRACUSE, N. Y.



## Geneva Steam Wagons

EXCEL OTHERS IN MANY POINTS, HAVING  
A BOILER THAT CANNOT BE BURNED OUT.

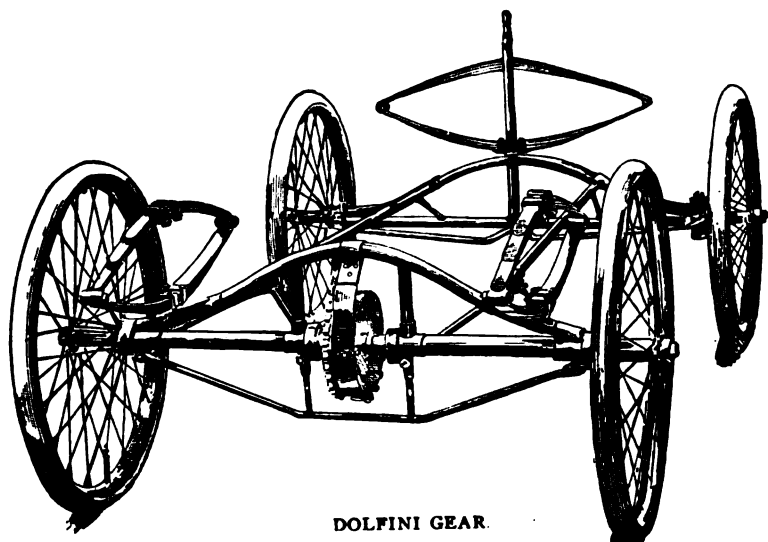
Boilers, Engines, Compensating Gears, Running  
Gears, Complete Wheels, Sold to the Trade.

Write for Prices and Full Information.

### The Geneva Automobile & Mfg. Co.

GENEVA, OHIO.





DOLFINI GEAR.

## Complete Running Gears and Fittings.

SPECIALLY ADAPTED TO THE USE OF  
CARRIAGE MANUFACTURERS, IN GASO-  
LINE, STEAM OR ELECTRIC VEHICLES

ONLY ONE GRADE..... **THE BEST.**

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**Brooklyn Automobile Supply Co.,**

332 CLASSON AVENUE,

BROOKLYN, N. Y.



PLEASE NOTE PLUNGER EXTENSION.  
IT PREVENTS PLUNGER FROM BECOMING DISPLACED.  
PATENT APPLIED FOR.

## BELLS

of all sizes  
for . . . .

Motor Carriages,  
Buggies, Etc.

...

Bevin Bros. Mfg. Co.,  
East Hampton,  
Conn.



## NAME PLATES

—FOR—

Automobiles, Bicycles and Carriages.

Steel stamps, letters and figures, the very  
best hand cut work at reasonable prices.



SEND US A TRIAL ORDER.

WE GUARANTEE SATISFACTION.

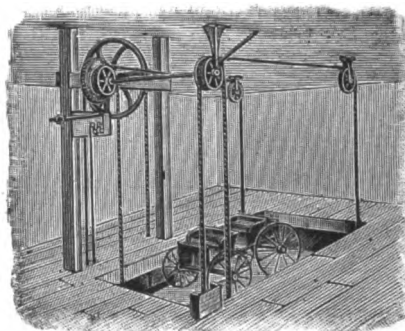
Our letters and figures are of new pattern  
(see cut), are heavy and strong, and will  
outlast three of the regular sets. . . . .

**The CHANDLER CO.,**  
SPRINGFIELD, MASS.

**LIBERTY AUTOBELL**

THIS IS THE ONLY CONTINUOUS  
RINGING CHIME BELL    
Very Easy to Operate, and  
the only Bell that will produce  
a Variety of Alarms.

**THE LIBERTY BELL CO**  
**BRISTOL CONN. U.S.A.**  
WRITE US FOR CIRCULAR



## Elevators,

Passenger and Freight

of every description.  
Send for Circulars.

THE

**Albro-Clem Elevator Co.**

Main Office and Works:  
**700 Glenwood Ave.,**  
**PHILADELPHIA.**  
Telephone Connection.

## NAME PLATES

FOR

**Automobiles, Bicycles  
and Carriages.**

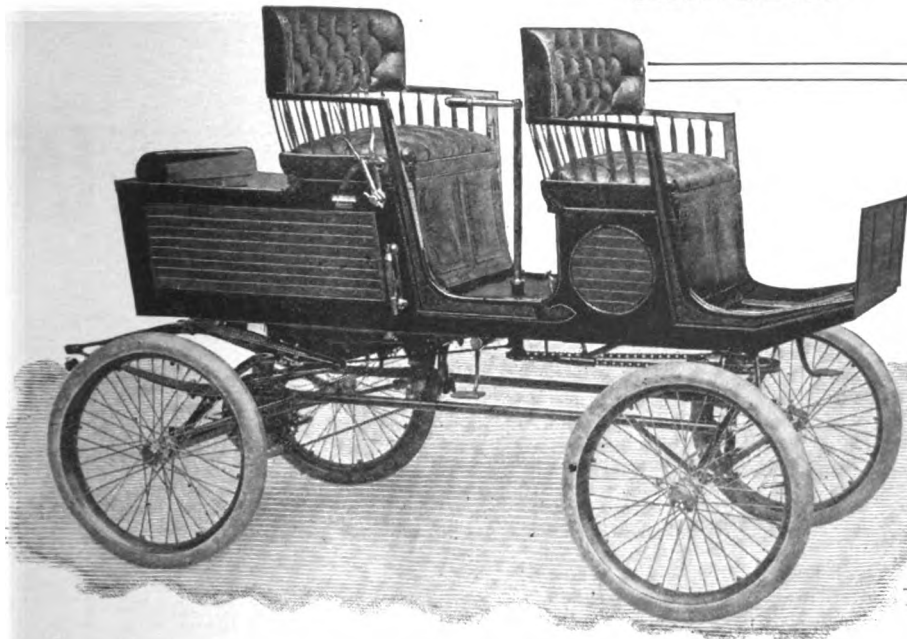
**N. C. WALTER & SONS, 194 WILLIAM STREET,**  
**NEW YORK.**

**HAVE YOU ANYTHING NEW** that you desire to bring to the attention of the trade? Now is your opportunity to push it. Manufacturers are already beginning to order such devices as will make their vehicles more up to date and better sellers. Perhaps yours is just the article they are looking for. Let us help you. Request will bring rates.

**TRADE NEWS PUBLISHING CO., 24-26 Murray Street, New York.**

Please mention "The Hub" when you write.





OUR UP-TO-DATE

# Surrey.

Will track ordinary County roads. Gasoline tank holds 10 gallons, sufficient for 100 miles of travel, 12 to 18 mile speed.

Superb Hill climber.

Patent Pilot Light.

Forward and backward brakes.

**Milwaukee Automobile Co.**



## A Long Distance Wagon for Business.

BUILT TO RUN 200 MILES WITHOUT REFILLING.  
NO MACHINERY IN THE BODY WHATEVER.

Write for Catalogues of models Nos. 1 and 2.

We are looking for a few more good agents.

**Loomis Automobile Co.**  
**Westfield, Mass.**

## THE St. Paul Road.

(Chicago, Milwaukee & St. Paul Ry.)

ELECTRIC-LIGHTED  
TRAINS

DAILY BETWEEN

**Chicago**  
**Des Moines**  
**Sioux City**  
**Omaha**

All Coupon Ticket Agents sell tickets via  
Chicago, Milwaukee & St. Paul Ry.

F. A. MILLER, General Passenger Agent,  
CHICAGO, ILL.

# RAW HIDE GEARS

NOISELESS  
DURABLE  
CLEANLY  
NO VIBRATION



Our gears are used for all kinds of geared machinery. They are especially adapted

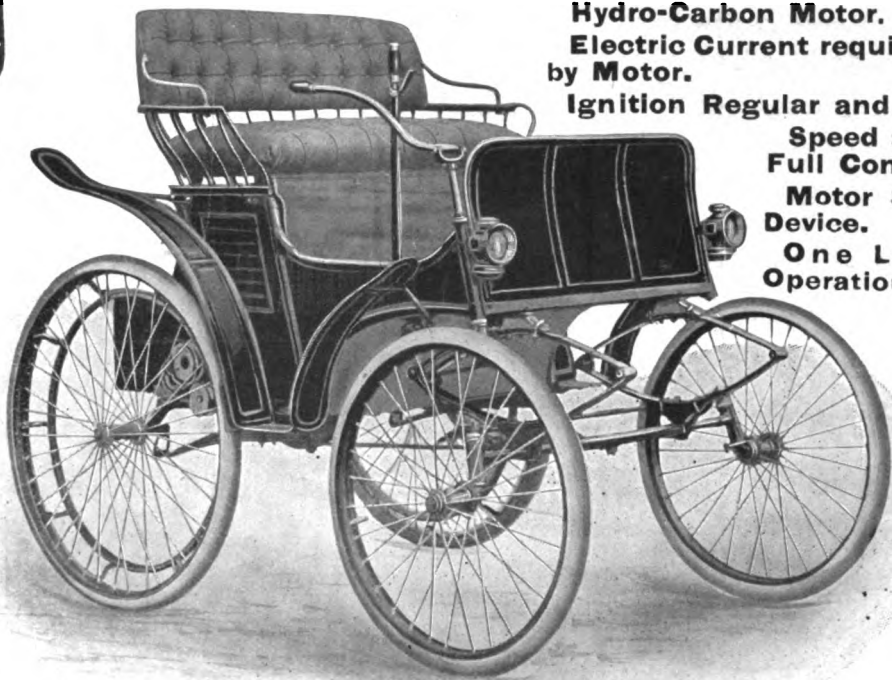
**FOR THE AUTOMOBILE SERVICE**

and have been adopted by a majority of the leading concerns in this line. Write for our circular.

THE  
**New Process Raw Hide Co.**  
SYRACUSE, N. Y.



# OAKMAN MOTOR VEHICLE.



Hydro-Carbon Motor.  
Electric Current required for Ignition provided  
by Motor.

Ignition Regular and reliable.

Speed at Will of Operator and under  
Full Control.

Motor Started from Seat by Simple  
Device.

One Lever Controls every Required  
Operation except Steering.

Cost of Operating Less  
than One-Quarter Cent  
per Mile.

Free from Odor.

Practically Noiseless.

Very Attractive.

Simple in Construction  
and Durable.


Weight 475 Pounds.

Style No. 120.

**AMERICAN VEHICLE CO., MANUFACTURERS.**  
45 BROADWAY, NEW YORK.

## *The Oldsmobile.*



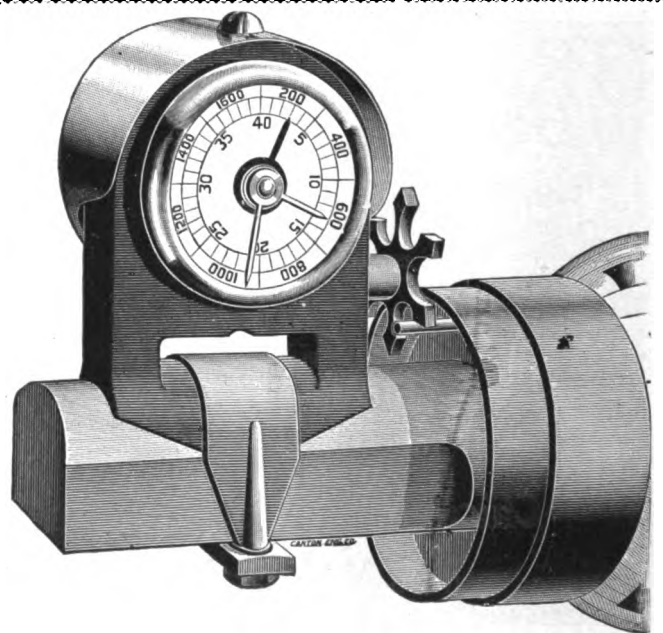
It's a marvel to most people. Runs  
40 miles on one gallon of gasoline.  
Starts from will from seat. Can be  
operated by the inexperienced.  
Fully guaranteed. 

Write for our Catalog.

**Olds Motor Works,**

53 Concord Ave.,

DETROIT, MICH.



## THE IMPROVED BELL ODOMETER

attached to your automobile or carriage, will give you  
the exact distance traveled, and announces each mile  
passed by the stroke of a bell.

Send for circular H.

**S. H. DAVIS & CO.,**

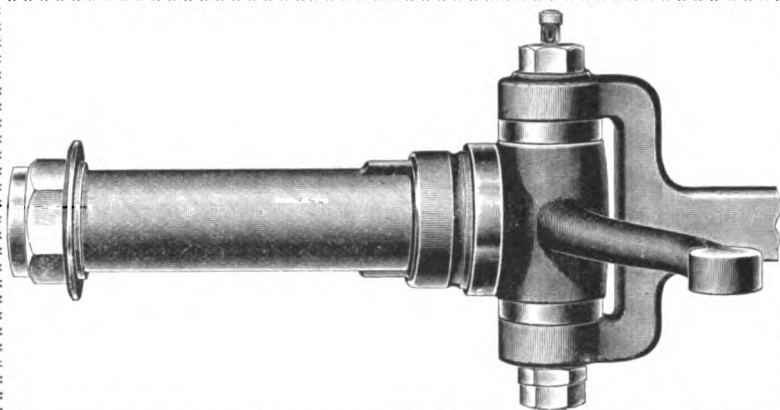
Cor. Portland & Sudbury Sts.,

BOSTON, MASS.



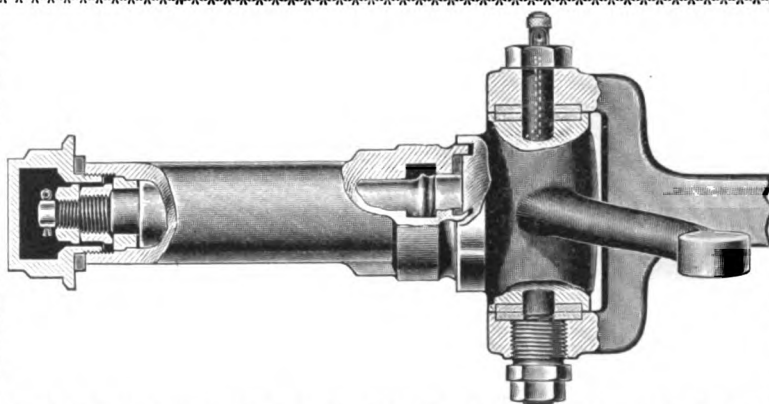






**DALZELL PATENT**  
**AXLE**  
FOR  
**AUTOMOBILES.**

**Dalzell Axle Co.**  
**SOUTH EGREMONT,**  
**MASS.**



IN recognition of the importance of the industry established by The "Mobile" Company of America at Kingsland-Point-on-the-Hudson, the New York Central & Hudson River Railroad has established a station at the factory of The "Mobile" Company with a service of twenty-five trains a day.

The original Philipse Manor, two hundred and twenty years old, still stands on the company's property, and the railroad company has appropriately, in view of its historical and literary associations, given this name to the station. The run from the Grand Central Station in New York is one hour. The manor house and old mill and Sleepy Hollow are part of the company's property, connected by the Headless Horseman's Bridge. The old Dutch Church, and Washington Irving's grave and the monument marking the spot where André was captured, are in the immediate vicinity. When you visit New York, you will find a trip to the factory of

**THE "MOBILE" COMPANY OF AMERICA**

quite worth a half day's outing. Kingsland Point itself is considered to be the most beautiful section of the Hudson. The visitor is looked after by The "Mobile" Company's corps of demonstrators, taken for a ride in a horseless carriage, and shown all the different processes which enter into the fifteen departments required to manufacture a horseless carriage. He may inspect both quality of material and workmanship, see the new carriages tested as they are taken from the works one after another, and have every opportunity to satisfy himself of the excellence of the carriage in every particular. **Price, \$750 Complete.**

**THE "MOBILE" COMPANY OF AMERICA, Philipse Manor Station, Tarrytown, N. Y.**





FACTORY OF THE MOBILE COMPANY OF AMERICA. VIEW LOOKING SOUTH.

## THE "MOBILE" A CARRIAGE FOR EVERY-DAY USE.

ON June 10th, four "Mobiles" started in the middle of the afternoon from the factory of The Mobile Company of America at Kingsland-Point-on-the-Hudson and ran to West Point, reaching the ferry at Garrisons in time for the 5:15 boat. Two hours and a half were spent in running about the Military Academy roads, then, after dinner, the four carriages started home by moonlight. The road from Kingsland Point to West Point is hilly, with many steep gradients scattered over its length; but from the State Camp at Peekskill through the Highlands of the Hudson to West Point occur long climbs and very steep and rough roads. The distance traveled was approximately, including the running at the Academy grounds, sixty-five miles. Not a delay or accident of any kind occurred; not a moment's worry to anyone of the eight people who made the journey. The "Mobiles" were in as good condition at the end as at the start—not one, but the entire four—and one of them had come up from New York to Kingsland Point before starting for West Point.

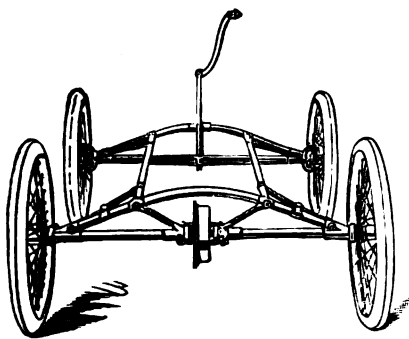
This gives an idea of what the "Mobile" is—a splendid piece of machinery, satisfactory in all its parts, of the best quality and workmanship throughout. Price, \$750. All visitors can inspect every department of the manufacture of "Mobiles." Twenty-five trains stop at Philipse Manor, the station on the company's grounds.

For information regarding "Mobiles" address

**THE "MOBILE" COMPANY OF AMERICA,**

PHILIPSE MANOR STATION, TARRYTOWN-ON-THE HUDSON, N. Y

## Automobile Running Gears.



We make a specialty of gears suitable for Gas, Steam or Electric power. Our gears have been in use with good results to buyers. They are adapted for all classes of road work without straining.

**Side or Centre Steering.**

**SIMPLICITY, SPEED, SERVICE.**

**READING AUTOMOBILE & GEAR CO.,**

10th and Exeter Streets. READING, PA.

## Automobile Gasoline Motors.



Also Motors for Bicycles  
and Launches.

Castings and Working Drawings.

**Lowell Model Co.,**

P. O. BOX 292,

Lowell, Mass.

Bicycles.

*The Hub*

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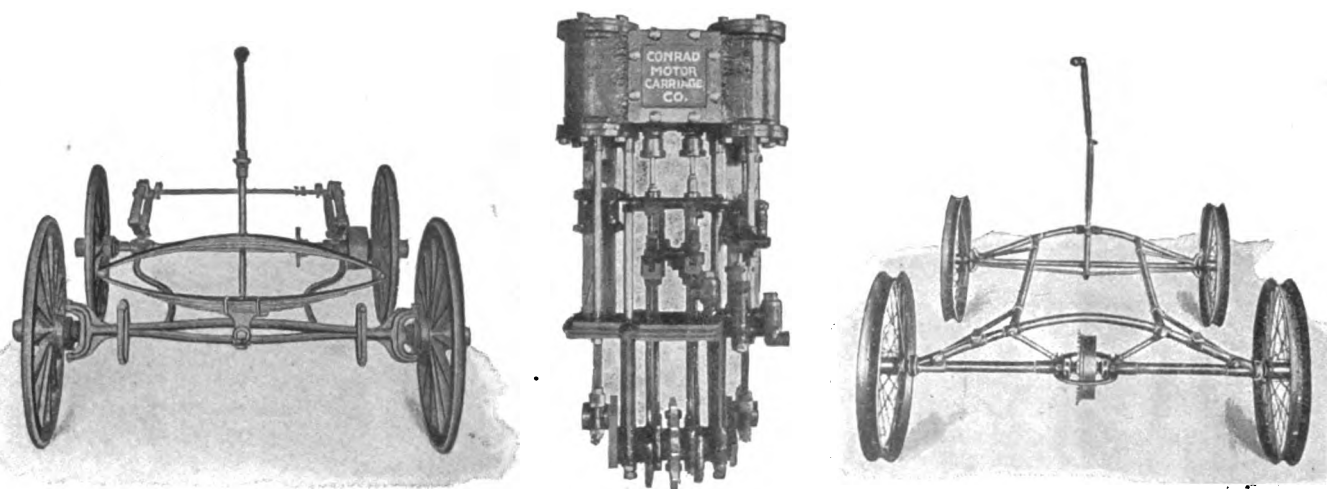
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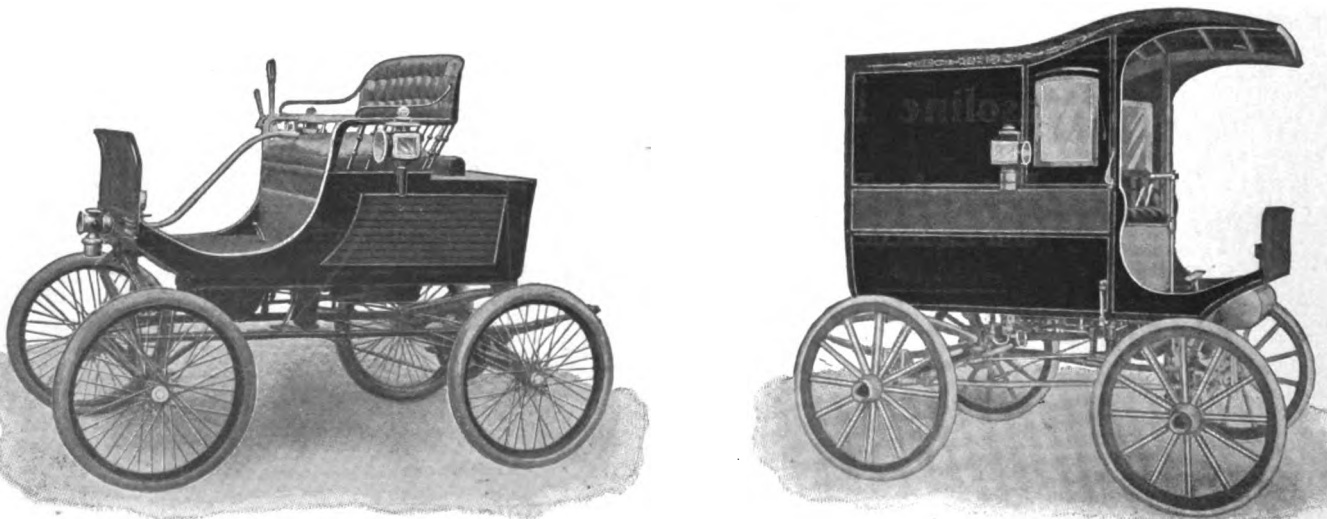
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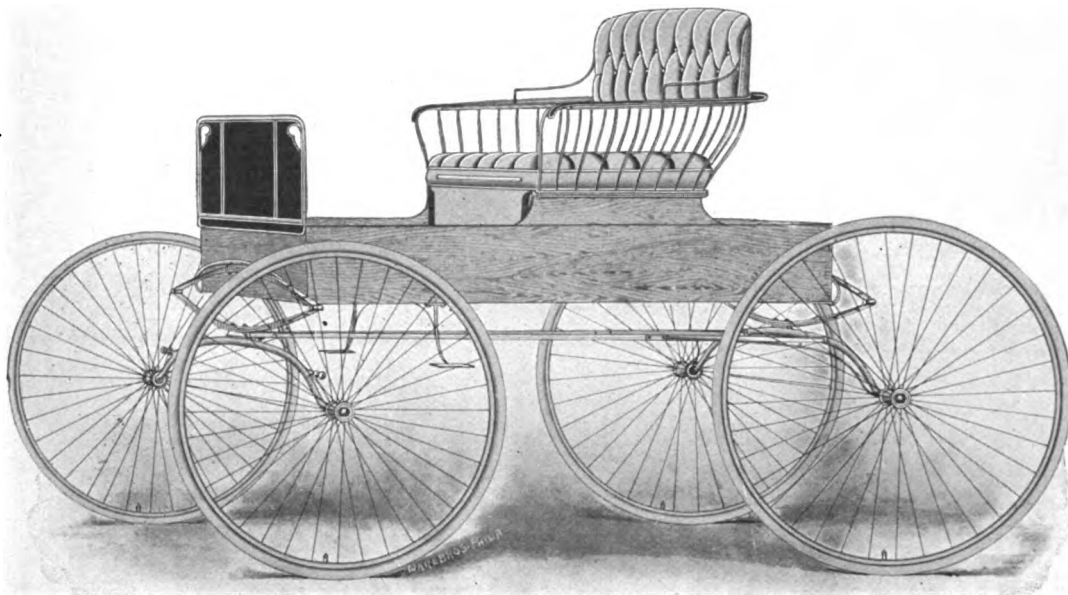


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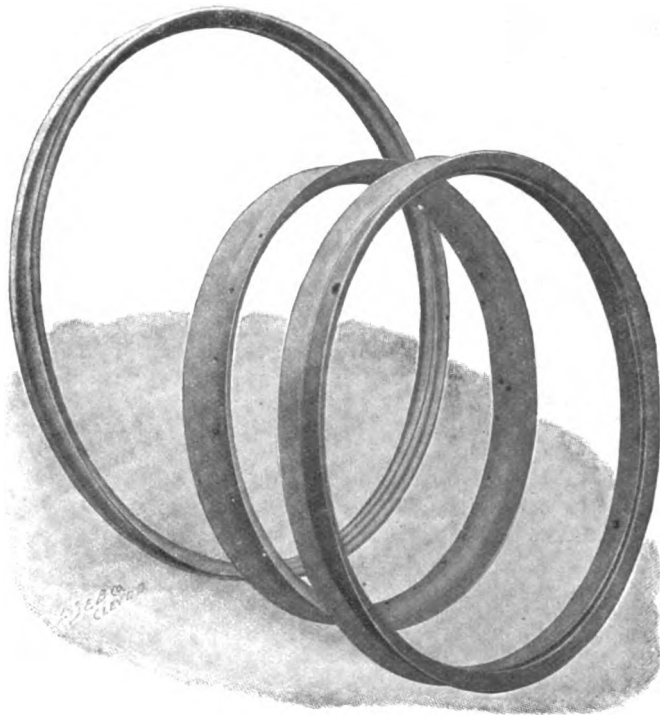
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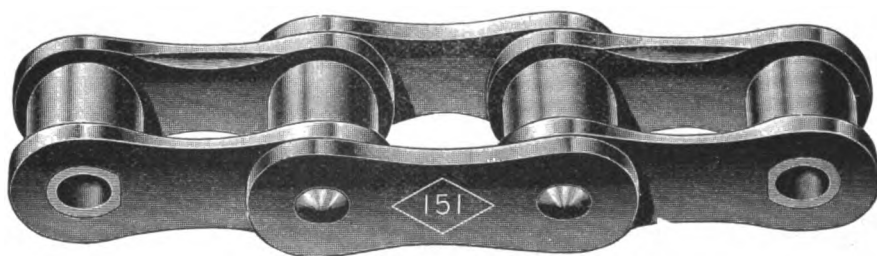
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# The Hub

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## FOREIGN REPRESENTATIVES.

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## Those Spots of Dry Rot.

In our notes on the condition of the carriage trade at the present time, we make mention of the fact that there are a few localities where prosperity has not been shared by the carriage builders, notwithstanding the citizens of those places are buyers of all classes of vehicles. Why this should be so is something of a mystery, as those same localities are sharers in the good business of the present time. But we are disposed to charge the fault home to the manufacturer. On him must rest the blame. He has those living around him who would be customers if they could purchase what they want; but not finding that possible they go elsewhere. The man who would make carriage building a success nowadays, must be ever on the alert. He must not hug old ideas to his breast, no matter how good the methods of years past. If all conditions do not meet the requirements of the times new methods must be resorted to. The appliances that answered years ago are obsolete now, as they cannot do the work as quickly or so well as those of more modern make. Styles must change, and that frequently. No man can build a reputation and a fortune as Thomas God-

dard did, on a single style of carriage. The courage requisite to put a new style on the market must be there, as well as the nerve to suffer disappointments without losing heart, are needed. Customers will come to those who keep their product up to the demands of the times. Style, finish, comfort, are prime requisites, and the man who can furnish these will build up a business even if far out at the cross-roads. His gameness and talent will find recognition wherever he may be, while he who lives on the past will soon go hungry. These are the days of the survival of the fittest, and he who falls behind must blame himself, not the public.



## Our Growing Export Trade.

No more striking evidence of the growing power of the United States is shown than in the agitation now evidenced by the press of Europe in regard to American products. So long as these were confined in great part to agricultural products the Old World was content to ship us the products of their workshops and invest their surplus capital in American railroads, etc., but now that we have outgrown our apprenticeship and have branched out as full-fledged journeymen, and are sending them our manufactured products, as well as our raw material, they profess to see danger ahead, and talk of some kind of an international combination against the output of our factories. They would form, as it were, a great trust among themselves, buying only of members, leaving the United States out except as a market for their products, hoping in such case to bring on the golden age in their countries. We can readily understand the fright that a new and aggressive competitor, such as our country has been for the past three or four years, could give to those countries; but they will get over this in time, and will see that there are two sides to the American invasion, and will realize that this country is a friend in disguise. Our new and advanced methods will spur them to greater activity, and something of the spirit and energy of American business methods will be injected into their veins. In the meantime we will be learning from them, and the spirit of rivalry thus engendered will prove a benefit to the whole world. We don't entertain the idea for a moment that we will close the workshops of Europe, or injure the working people of those countries, as some of their agitators would have their people believe. While it is our privilege to compete in the world markets, we do not offer a competition that will injure, neither do we intend to overdo and eventually suffer from our own acts. We cannot fail being amused, however, at the fright given to the Old World producers, but we do not fear an international compact that will shut us out of the markets of those countries. We have no fear of them doing aught that will lose our markets to them. We are equally sure that more and more of



our goods will go abroad yearly, to Europe and the East, and we will buy as heretofore; but Europe must wake up to the fact that a new factor in the world's progress, political, commercial and social, by the advent of America, and that we and all other peoples of the world will be benefited thereby, and none more than the workmen; and neither threats nor combinations will shut us out. Like Sandy, "we love peace (commercial) and will have it even if we have to fight for it."



## The Production of High Grade Carriages

THE quality of an article of manufacture is an important one to a country, or an industry, and if the impression is created that quality has depreciated, great injury must result, and in no one article is this more true than with carriages. The statement made, therefore, that there is an actual decrease in the output of fine carriages, as compared with the product of twenty-five years ago, by so prominent and conservative a trade journal as the *Carriage Monthly*, becomes of so much importance that to ignore it would be a virtual acknowledgment on the part of THE HUB that the statement was correct. Our opinion to the contrary is well fixed, but we realize that an assertion not backed up by proof might well be questioned. We, therefore, placed ourselves in communication with a number of members of the trade in various localities, and up to this date we have received thirty-three\* answers. So far the record stands thirty opposing the statement of the *Carriage Monthly* and three favoring it. We publish in another part of this month's HUB extracts from these letters, as our space prohibits us publishing them in full. It will be noticed that the two that claim a decrease are governed entirely by local conditions; the third, while treating the matter from a comparatively local standpoint, makes special reference to firms, and we suppose it is because of that that the writer asks us to consider his communication as "strictly confidential." The gist of his letter is that many small manufacturers of good work have been driven out of business, mainly because of the inability of manufacturers of hand made work, which he claims to be superior, to compete with machinery, a position that is untenable. Another argues that because of a decrease in the number of fires in the smith shop there must of necessity be a decrease in the output. If conditions were the same as they were twenty-five years ago his claim would be a good one, but as it is now, with machinery and appliances, the great variety of shapes and sizes of bars, round, full and half ovals, ready for welding to forged ends, instead of being swaged by the smith to shape, and the greatly increased quantity of drop forgings used, a forge may double its output without adding to the labor of the smith. One of the largest manufacturers of high grade work in this country has enlarged its plant and increased its output nearly one-third during the past six months, and at the same time worked 10 per cent. less fires than when building the lesser amount of work. There can be no question as to the effect of changed conditions in certain localities, but these isolated cases serve rather to strengthen than to weaken the position of THE HUB, as each shows a local cause, not a general one. The overwhelming evidence in favor of an increase in the production of high grade work is

\* Additional letters have been received since those mentioned above went to press.

most satisfactory. We would have regretted to have been forced to the conclusion that there had been a decrease, more because of its effect upon our export trade than because of our being in the wrong. We would have been disappointed, if after all the improvements of the last quarter of a century, the increase in technical knowledge, the growing demand for specially trained and skilled men, and the effects of public exhibitions, such as horse shows, the quality of carriages had decreased. We ask our readers to peruse the letters published in our columns and say "to the world and all the rest of mankind" that the American carriage is a better vehicle than ever before, and that not only is there a great increase in the output of high grades, but the indications all point to a still greater increase in the manufacture and sale of the best.



## Finished Carriage Exhibits.

The National Vehicle Board of Trade has taken up the subject of finished carriage exhibits, with a view to benefiting the carriage trade by doing away with objectionable features that now exist. The Board of Trade contends that the number of such exhibits should be limited, as each entails a heavy expense on the manufacturer, and leads to quoting prices on the exhibited sample vehicles much below those asked in the regular course of business. The manufacturer excuses these low quotations by a desire to avoid the expense of boxing and reshipping the vehicles to his factory, and then in all probability overhauling them at a considerable expense. It has been well understood by the trade up to the present time that the Eastern exhibit is controlled entirely by parties publishing a trade journal, and not by a dealers' association; but from the correspondence with President Van Fleet, of the Retail Carriage and Harness Dealers' Protective Association, the inference is that an association controls and directs the exhibit held in the fall in New York City. If so, that association has been extremely reticent regarding the matter, and has allowed other parties to lease the exhibition hall, regulate all matters pertaining to the exhibit and to appropriate all receipts, while the only public act on the part of the association was, at a meeting some two years ago, to authorize the holding of the exposition under the auspices of the association, and the Cincinnati exposition is situated much in the same way. As we understand it, the National Vehicle Board of Trade claims that all exhibits should be in full charge of an association at convention time. What will be the outcome of the matter is a query. If an exhibit is to be held it looks as though the National Board of Trade will refuse to recognize it unless it is in absolute control of an association, otherwise the members of the Board of Trade, all of whom are carriage builders, will refuse to participate, and as this new organization now comprises most of the large wholesale manufacturers, as well as many who build in small quantities, there could, under such circumstances, be no successful exhibition. As the time is approaching when arrangements must be made for the fall exhibits, whatever is done must be done quickly. We believe that the trade generally favors two exhibitions, one in the East and one in the Central West, and we know that they decidedly object to paying for space in the exhibition and paying an additional bonus, but they will do so unless some specific action is taken by the manufacturers singly or through the Board of Trade, to encourage an exhibit in which all who wish to do so can participate, without being compelled to pay more than the necessary sum to cover the cost of space in the exhibition. The Board of Trade should, therefore, act immediately and arrange for two exhibitions, one in the East, the other in the West, or withdraw all opposition to the present methods and means whereby these expositions are held. It is useless to attempt to suppress exhibitions of finished carriages, and as we understand the Board of Trade, no attempt to do so is contemplated. All that is proposed is to regulate them, so that good only can result. THE HUB has no other interest in this matter than to favor such action



as will benefit the carriage industry of our country, and trusts that the agitation of the subject will result in some definite plan whereby the present controllers can do the work without the objectionable features, or that the exhibits be taken in hand solely by associations that will hold themselves responsible for just conduct to the trade, and will make charges which will be sufficient to cover actual expenses, and also control the selling at such times in a way that will not injure the local dealer or manufacturer, or disarrange retail prices. The secretary of the National Vehicle Board of Trade is Mr. W. H. McIntyre, Auburn, Ind.



## What Constitutes a First Class Carriage?

If we ask the above question of a skilled workman in any one of the departments of carriage construction, we will most likely get an answer influenced by the mechanical features of the individual part with which he is most closely connected. If a body maker, his opinion will be molded by the lines of the body and its mechanical construction; he will hardly notice other parts. The painter will be enthusiastic, if the colors are pure, the surface perfect, and the finish mirror like. The blacksmith may go enough beyond the mechanical execution of the iron-work to look into the hang of the body, set of axles, etc., as they affect draft; while the trimmer will look to the style and workmanship of his branch. The draftsman and general constructor will take a broadened view and form his opinion from the appearance of the vehicle as a whole, and the results of the execution of each part, rather than the details. Then there is another party to be counted upon, viz., the user. He may or may not be familiar with the technics of the mechanical parts. In either event he will be governed largely by the appearance and the comfort of the vehicle. He will demand the latest improvements, and insist upon those appliances that contribute to comfort, without which nothing can convince him that the carriage is first class, and the higher the reputation of the builder the more exacting the demand of the buyer. A man may be content to purchase the lowest priced vehicle, even when entirely without modern improvements; but as soon as that grade is passed he exacts these improvements to an extent commensurate with the price paid. There is not a carriage manufacturer, no matter how high his reputation, who could continue his business as a first class house if he built as he did twenty-five years ago, no matter how superior the wearing qualities of the work, it lacks so many of those improvements which are recognized as necessary today, that the carriages could not be sold even at prices realized for second grade work. To be a first class carriage, therefore, there must be artistic style, correct proportions, superior mechanical construction, fine finish, easy riding qualities, light draft and the addition of all approved modern appliances. When these are all amalgamated and artistically blended, then we have a carriage in its perfection, for the time being; but even then we have not reached, neither can we expect to reach, a perfection that ends all attempts at improvement. The first class carriage of the present, therefore, may be a second class one next year. The "golden coach" of the past has no place today outside of the museums or the circus parade, although once "the very embodiment of high art and mechanical perfection." The fact, therefore, that so much is necessary for a "first class" carriage makes it obligatory that a second grade be established which, while embodying the leading features of the first class can be constructed at less cost, and yet fill in a great measure the requirements of a strictly first class vehicle, and it is in the production of this line that the greatest improvement has been made during the last decade. The man who can see no good in a vehicle that is not strictly hand made, shrugs his shoulders and condemns the carriage, notwithstanding its merits, overlooking the fact that skilled hands finish the work of the accurately adjusted machines, and thus produce the highest mechanical results. And in all the products of the American factories there is none that excel, and few that equal, the first class carriage as a mechanical, artistic and pleasure giving contribution to modern life.

## Description of Latest Styles.

### CANOPY-TOP SURREY.

Scale,  $\frac{1}{2}$  in. to the foot.

(See Fashion Plate No. 512.)

THE surrey illustrated by Fashion Plate No. 512 is designed to meet the wants of those buyers who want something out of the general line. The seats are of cane work closely worked over iron frames. The rear of the body shows a round, instead of a square corner. The umbrella canopy top is the best for this character of carriage. A small slatted panel finishes the rear end panel. The dash is cane work and the wings patent leather.

*Dimensions of Woodwork.*—Body, width across top, 31 in.; across bottom, 30 in. Width of seat across top, 42 in.; across bottom, 36 in. Wheels, wood hub. Height, front 42 in.; rear, 46 in. Hubs, length,  $6\frac{1}{2}$  in.; diameter at center, 4 in.; front end,  $2\frac{3}{4}$  in.; back end, 3 in. Size of spokes,  $1\frac{3}{8}$  in. Number of spokes, 14 and 14. Stagger,  $\frac{5}{8}$  in. Depth of rims,  $1\frac{3}{8}$  in. Tread of rims, 1 3-16 in. Depth of bands, front,  $2\frac{1}{4}$  in.; back,  $\frac{7}{8}$  in. Distance between centre of axles, 76 in.

*Dimensions of Ironwork.*—Springs, front, 36 in. long between centre of heads, with 7 in. opening on main leaf. Width of steel,  $1\frac{1}{2}$  in. Number of plates, 5. Thickness, main No. 3; rest, No. 4 steel. Rear, 36 in. long, with  $7\frac{1}{2}$  in. opening on main leaf. Width of steel,  $1\frac{1}{2}$  in. Number of plates, 6. Thickness, main No. 3; rest, No. 4 steel. Axles, front and rear,  $1\frac{1}{4}$  in. fantailed. Tires,  $1\frac{1}{4}$  in. by 5-16 in. Fifth wheel, 14 in. diameter. Track, outside, front and rear, 4 ft. 8 in.

*Painting.*—Body, black; basket work, natural color. Imitation slatwork on sides and in the centre of back panel, carmine. Gear, coach painters' red, striped with black. Trimming, gray whipcord; cushions and backs made up in blocks.

### CARRIAGE DELIVERY WAGON.

Scale,  $\frac{1}{2}$  in. to the foot.

(See Fashion Plate No. 513.)

A BUSINESS wagon is as much of a convenience to the carriage builder as it is to any other house, but it requires special proportions and appliances. Fashion Plate No. 513 illustrates a convenient wagon for the carriage builder. It is simple and plain in its construction and fills the bill for the purpose intended.

*Dimensions of Woodwork.*—Body, length, 8 ft.; width across outside, 44 in. Width of seat across top, 50 in.; across bottom, 45 in. Wheels, wood hub. Height, front 3 ft. 2 in.; rear, 4 ft. 4 in. Hubs, length, 8 in.; diameter at centre,  $5\frac{1}{2}$  and 6 in.; rear, 4 ft. 4 in. Hubs, in.; back end,  $4\frac{1}{2}$  and 5 in. Size of spokes,  $1\frac{1}{2}$  and  $1\frac{5}{8}$  in. Number of spokes, 12 and 14. Stagger,  $\frac{1}{2}$  in. Depth of rims,  $1\frac{5}{8}$  in. Tread of rims,  $1\frac{1}{2}$  in. Depth of bands, front,  $2\frac{1}{2}$  in.; back, 1 in. Distance between centre of axles, 60 in.

*Dimensions of Ironwork.*—Springs, front, 36 in. long between centre of heads, with 9 in. opening on main leaf. Width of steel,  $1\frac{3}{4}$  in. Number of plates, 7. Thickness, No. 2 steel. Back, 36 in. long, with 9 in. opening on main leaf. Width of steel,  $1\frac{3}{4}$  in. Number of plates, 7. Thickness, No. 2 steel. Axles, front,  $1\frac{1}{2}$  in. fantailed; rear,  $1\frac{1}{2}$  in. square. Tires,  $1\frac{1}{2}$  in. by 7-16 in. steel. Fifth wheel, 14 in. diameter. Track, outside, front and rear, 4 ft. 8 in.

*Painting.*—Body, black, excepting seat rises and bracket panel, which are cream yellow, and striped with a  $\frac{3}{8}$  in. line of black. Gear, cream yellow; all ironwork black; no striping. Trimming, leather cushion back and fall.

### PROVISION WAGON.

Scale,  $\frac{1}{2}$  in. to the foot.

(See Fashion Plate No. 514.)

FASHION plate No. 514 illustrates a style of provision wagon that is popular in New York city. The body is large and roomy and the platform, gear and low wheels permit of short turning.

*Dimensions of Woodwork.*—Body, width across outside, 3 ft. 8 in.; length, 8 ft.; side sills are  $3\frac{1}{4}$  in. by  $1\frac{1}{4}$  in. Front and three centre cross bars are 3 in. by  $1\frac{1}{8}$  in.; tail bar is  $1\frac{3}{4}$  in. sq. rabbited to take



floor. Rear corner posts are  $1\frac{1}{4}$  in. by  $1\frac{5}{8}$  in. Front corner posts  $1\frac{1}{2}$  in square. Rails and standards are of the usual dimensions. Wheels, wood hub. Height, front, 3 ft. 3 in.; rear, 4 ft. 4 in. Hubs, length,  $8\frac{1}{2}$  in.; diameter at centre,  $6\frac{1}{4}$  and  $6\frac{3}{4}$  in.; front end,  $4\frac{1}{4}$  in. and  $4\frac{3}{4}$  in.; back end,  $4\frac{3}{4}$  in. and  $5\frac{1}{4}$  in. Size of spokes,  $1\frac{5}{8}$  in. and  $1\frac{3}{4}$  in. Number of spokes, 12 and 14. Stagger,  $\frac{1}{4}$  in. Depth of rims,  $1\frac{3}{4}$  in. Tread of rims,  $1\frac{1}{2}$  in. Depth of bands, front, 3 in.; back, 1 in. Distance between centre of axles, 61 in.

*Dimensions of Ironwork.*—Springs, front, 42 in. long between centre of heads, with  $5\frac{1}{2}$  in. opening on main leaf. Width of steel,  $1\frac{3}{4}$  in. Number of plates, 6. Thickness, No. 2 steel. Front cross, 42 in. long, with  $5\frac{1}{2}$  in. set. Number of plates, 7. Thickness, No. 2 steel. Back, 42 in. long, with 6 in. opening on main leaf. Width of steel,  $1\frac{3}{4}$  in. Number of plates, 7. Thickness, No. 2 steel. Back cross, 42 in. long, with 6 in. set on main leaf. Number of plates, 8. Thickness, No. 2 steel. Axles, front,  $1\frac{1}{2}$  in.; rear,  $1\frac{5}{8}$  in. Tires,  $1\frac{1}{2}$  in. by  $\frac{1}{2}$  in. steel. Fifth wheel, 24 in. diameter. Track, outside, front and rear, 4 ft. 8 in.

*Painting.*—Body, vermillion; chamfers and ironwork, black, fine lining white. Gear, vermillion, striping  $\frac{1}{8}$  in. lines of black. Trimming, leather cushion and back, brass tips on corner posts.

#### MILK WAGON.

Scale,  $\frac{1}{2}$  in. to the foot.

(See Fashion Plate No. 511.)

FASHION plate No. 511 illustrates a style of milk wagon in use in some of our western cities. It is designed for carrying bottled milk. Access is had at the rear. The deep panel side is removed by a window and a slatted panel. The body is molded all around with 1 in. flat moldings. The opening at the back is 6 ft. by 2 ft. The gear is a heavy perch and hounds. The springs are set flush with the outside of the body, the front being raised 25 inches high. The transom in the front is hinged to swing up on the inside.

*Dimensions of Woodwork.*—Body, length over all, 9 ft. Width across outside, 4 ft.  $4\frac{1}{2}$  in. The drop at rear extends down 16 in. and is 25 in. wide by 22 in. long. Wheels, Warner patent. Height, front, 3 ft.; rear, 4 ft. Hubs, length,  $9\frac{1}{2}$  in.; diameter at centre,  $8\frac{1}{2}$  in.; front end,  $4\frac{1}{2}$  in.; back end, 5 in. Size of spokes,  $1\frac{7}{8}$  in. Number of spokes, 14 and 16. Depth of rims,  $1\frac{7}{8}$  in. Tread of rims,  $1\frac{3}{4}$  in. Depth of bands, front,  $2\frac{1}{2}$  in. Distance between centre of axles, 55 in.

*Dimensions of Ironwork.*—Springs, front, 36 in. long between centre of heads, with 6 in. opening on main leaf. Width of steel,  $1\frac{3}{4}$  in. Number of plates, 6. Thickness, No. 2 steel. Back, 43 in. long, with  $4\frac{1}{2}$  in. opening on main leaf. Width of steel, 2 in. Number of plates, 6. Thickness, No. 2 steel. Axles, front and rear,  $1\frac{1}{2}$  in. fantail. Tires,  $1\frac{3}{4}$  in. by  $\frac{1}{2}$  in. steel. Fifth wheel, 14 in. diameter. Track, outside, front and rear, 5 ft.

*Painting.*—Body, side or middle and narrow upper panels are pea green, striped with an  $\frac{1}{8}$  in. line of gold; remaining part of body cream yellow, striped with a  $\frac{1}{8}$  in. line of black. Slatwork on sides and molding over window carmine. Gear, cream yellow, striped with two 1-16 in. lines of black. Trimming, place for drivers' cushion is reserved at the rear. Finish, brass hand rails are used at rear.

#### SKELETON TRAINING CART.

(See "Latest Styles.")

PLATE CXLVIII. The skeleton cart shown by this plate is designed primarily as a training cart, but is used to a considerable extent at horse shows in classes where the horse only is considered. This is a simple but very convenient cart for the purpose designed. The one shown hangs level, a feature that is too often overlooked in fitting up two-wheelers.

#### TANDEM AND BRACKET CART.

(See "Latest Styles.")

PLATE CNLIX. The tandem and cart shown are a little out of the regular order, the cart being a plain training cart with straight shafts, and the leading horse harnessed with a flat breast collar, a style that is meeting with some approval, but it does not have the dressy appearance of a round collar and harness for this particular use.

#### PHAETON CART.

(See "Latest Styles.")

PLATE CL. illustrates a very desirable and comfortable cart for ladies' use. The seat is a full phaeton, as is the bow top. The shafts are slightly bent, and the body is so balanced as to hang level. The whiffletree being hung under the shaft bar, the panels of the body are finished with imitation canework. The sunk bottom and framework are painted in dark colors. The harness used is of the heaviest two-wheeler, with coach bridle. The collar is straight coach, the whole outfit being of the heavier style and is exceedingly showy.

#### SIDEBAR BUGGY.

(See "Latest Styles.")

PLATE CLII. The square box body of the runabout type is a popular style among gentlemen drivers. When hung upon sidebars and half springs is a very easy riding vehicle, and one that finds favor among horsemen and horsewomen, as it is now recognized as a suitable carriage for lady drivers. The harness is the standard breast collar, one inch trace.

#### IRISH JAUNTING CAR.

(See "Latest Styles.")

PLATE CLII. The jaunting car shown is one that was freely used in Newport last season, and is the same one published some months ago in THE HUB, but is fitted up for the driver to sit on a cross-seat instead of sidewise on a side seat. The two illustrations serve to show this vehicle to a good advantage.

#### END SPRING "RUNABOUT."

(See "Latest Styles.")

PLATE CLIII. The long body which constitutes one of the leading features of the "runabout" has become popular because of its comfortable proportions and by one of those whims of fashion which cannot be explained is now recognized as the proper style for ladies who seek to indulge themselves on the road behind a speedy trotter. The one shown is complete in all the details of the outfit.

#### SOUTH AFRICAN CART.

(See "Latest Styles.")

PLATE CLIV. illustrates a style of cart that has met with favor as an export carriage, notably to South Africa. It is built heavy and plain. It represents one of the styles of carts that are demanded for the export trade. The very heavy wheels are a characteristic feature.

#### COMBINATION TRUCK.

(See "Latest Styles.")

PLATE CLV. illustrates a combination truck, for one horse, built by the Auburn Wagon Co., of Martinsburg, W. Va. The platform is ten feet long and four feet wide. The sideboards are removable, thus converting it into a platform truck. It is furnished with a tilting seat, the combination making it a convenient and serviceable truck or wagon.

#### DELIVERY WAGON.

(See "Latest Styles.")

PLATE CLVI. represents an up-to-date delivery wagon, the body being modeled after the most popular of the day and the platform gear is fitted for shafts or pole. It is strong, neat and roomy, and when well painted it is attractive.

#### MILK WAGON.

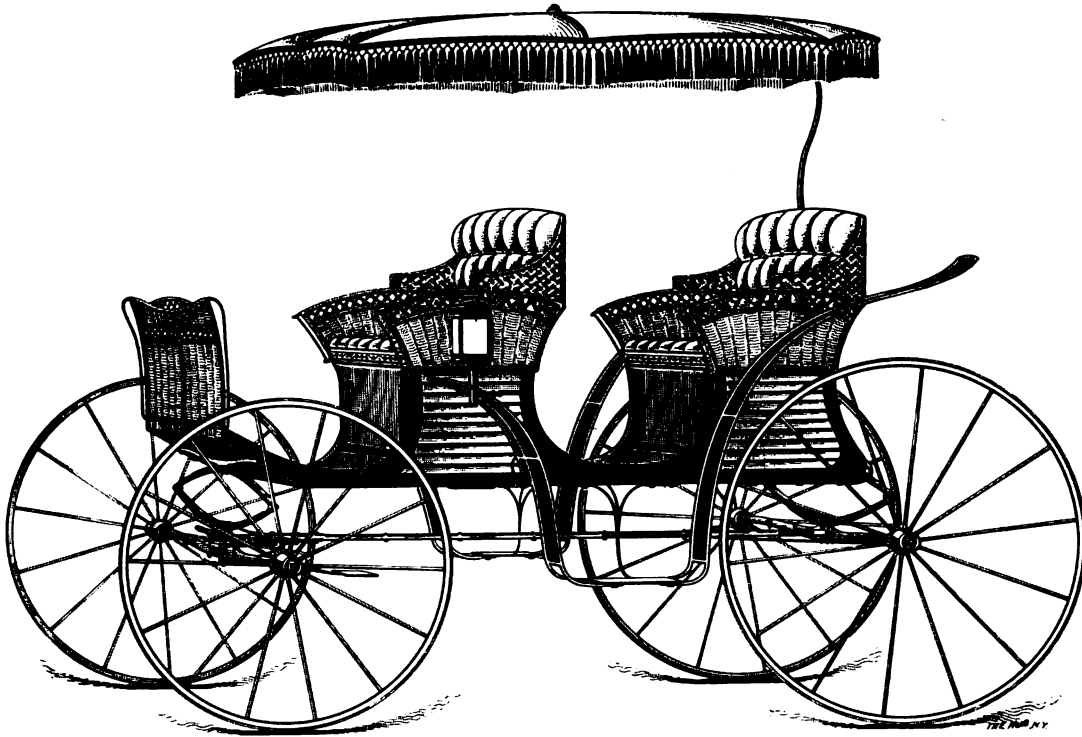
(See "Latest Styles.")

PLATE CLVII. illustrates a milk wagon of a style used by a large milk company. It is of substantial build, the body being of "express" make but cut down in the center for a doorway. Wholesale distributing wagon it has much to recommend it.



**Latest Styles. July, 1901.**

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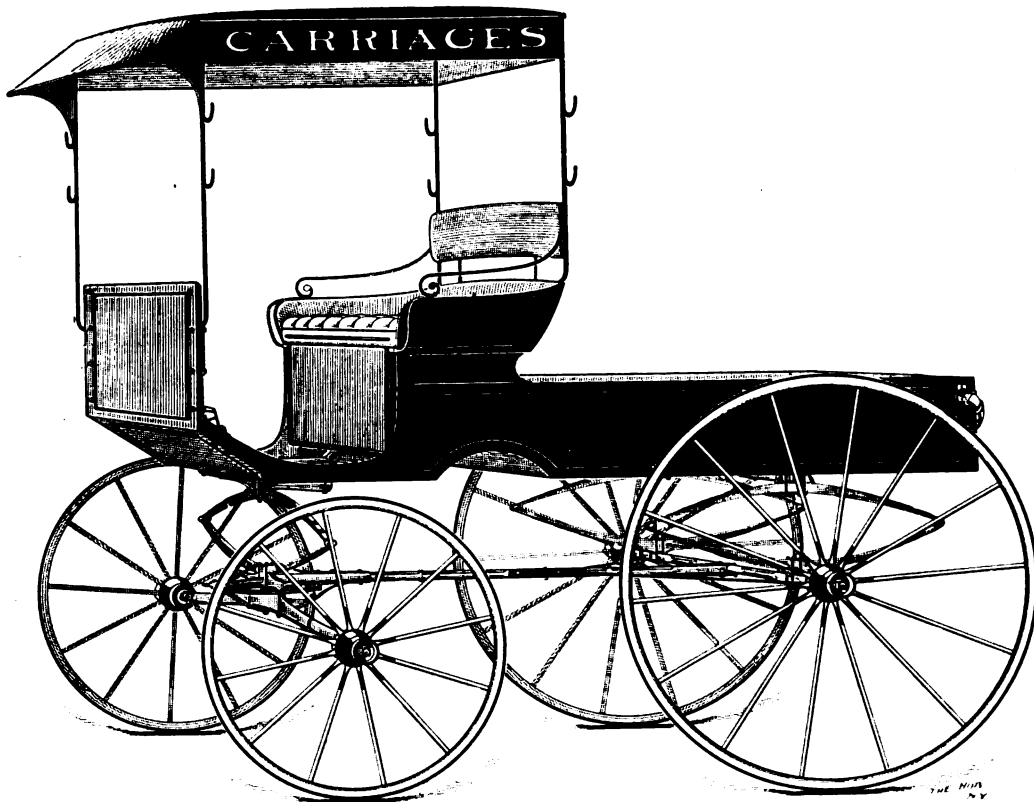


No. 512. Canopy Top Surrey.

SCALE,  $\frac{1}{2}$  INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.25.)



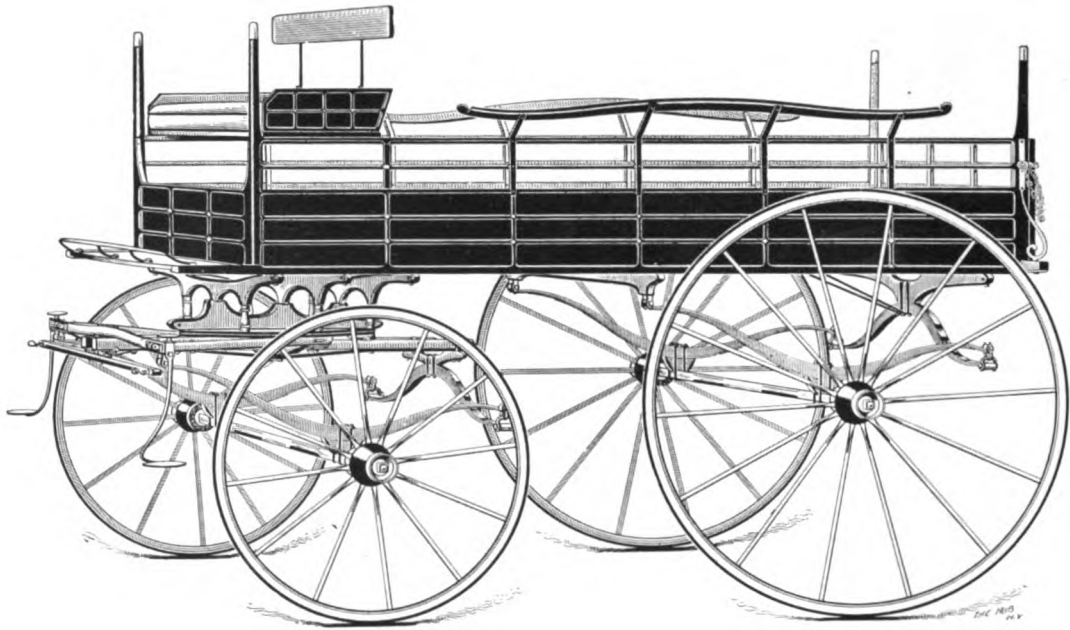
No. 513. Carriage Delivery Wagon.

SCALE,  $\frac{1}{2}$  INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.50.)



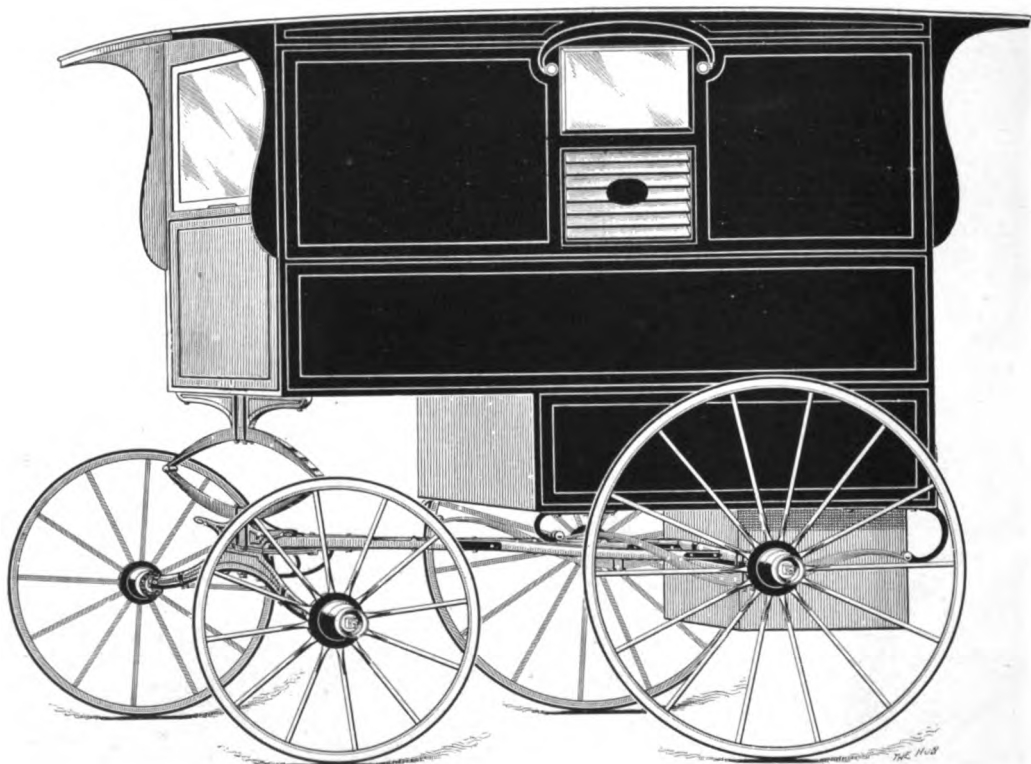


No. 514. Provision Wagon.

SCALE.  $\frac{1}{4}$  INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.50.)



No. 515. Milk Wagon.

SCALE.  $\frac{1}{2}$  INCH TO THE FOOT.

See description under "Latest Styles."

(Electrotype, \$1.50.)



Plate CXLVIII.

**Skeleton Training Cart.**

See description under "Latest Styles."

(Electrotype, \$2.00.)

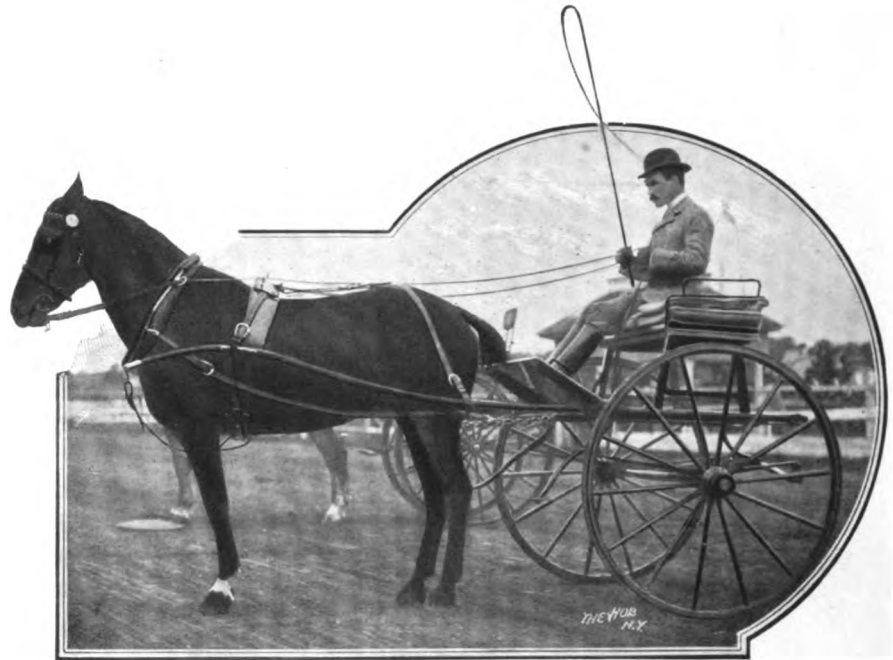


Plate CXLIX.

**Tandem and Bracket Cart.**

See description under "Latest Styles."

(Electrotype, \$2.00.)

Plate CL.

**Phaeton Cart.**

See description under "Latest Styles."

(Electrotype, \$2.00.)





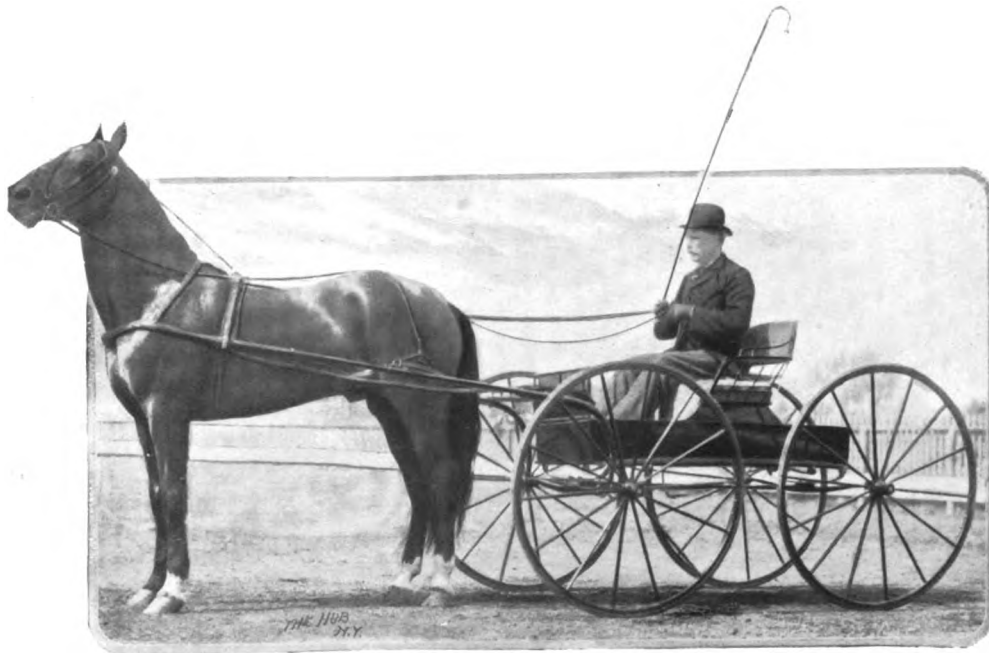


Plate CLI.

**Sidebar Buggy,  
Runabout Body.**

See description under "Latest Styles."

(Electrotype, \$2.00.)



CLII.

**Irish Jaunting Car.**

See description under "Latest Styles."

(Electrotype, \$2.00.)



Plate CLIII.

**Endspring Runabout.**

See description under "Latest Styles."

(Electrotype, \$2.00.)





Plate CLIV. South African Cart.

See description under "Latest Styles."

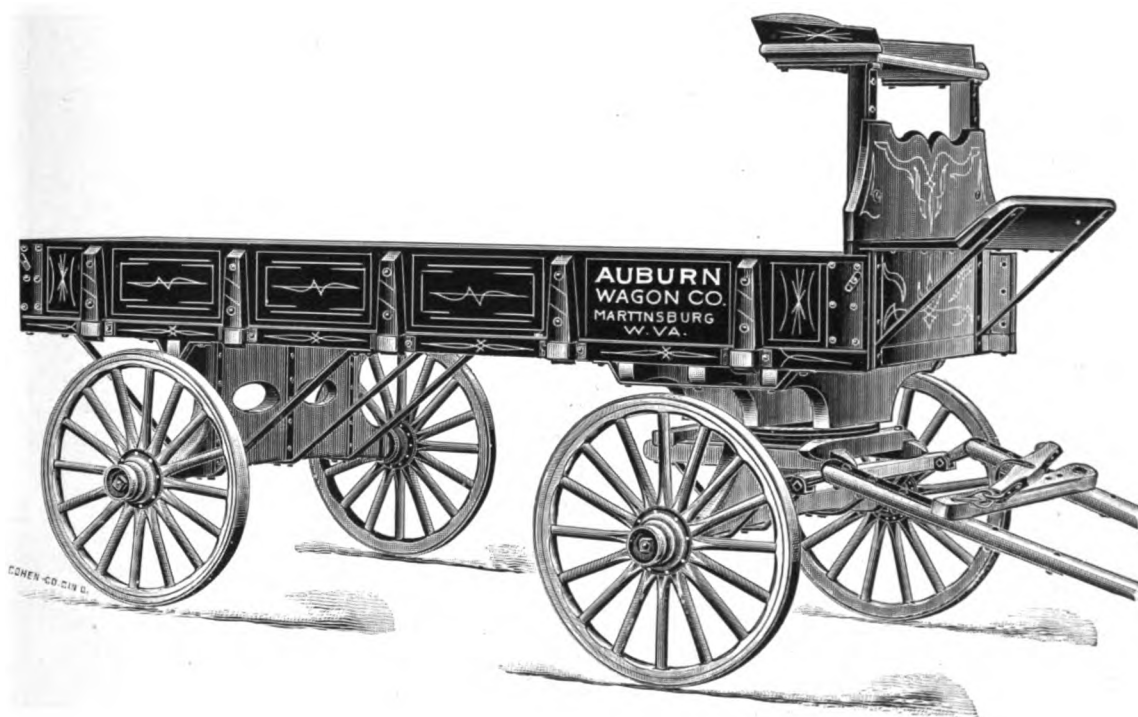


Plate CLV. Combination Truck.

See description under "Latest Styles."





Plate CLVI. Delivery Wagon.

See description under "Latest Styles."

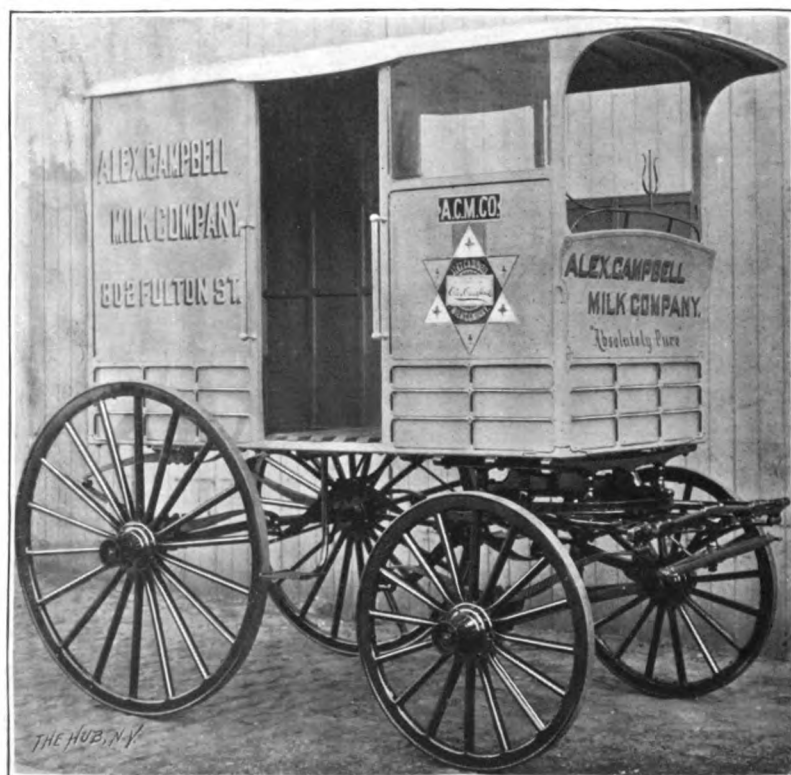


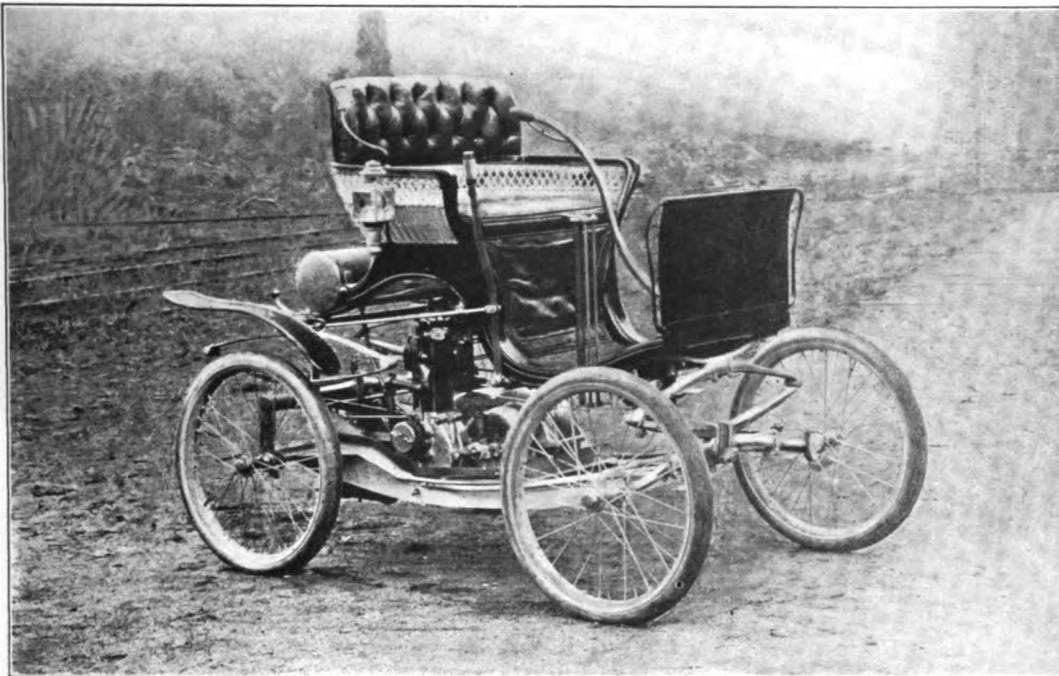
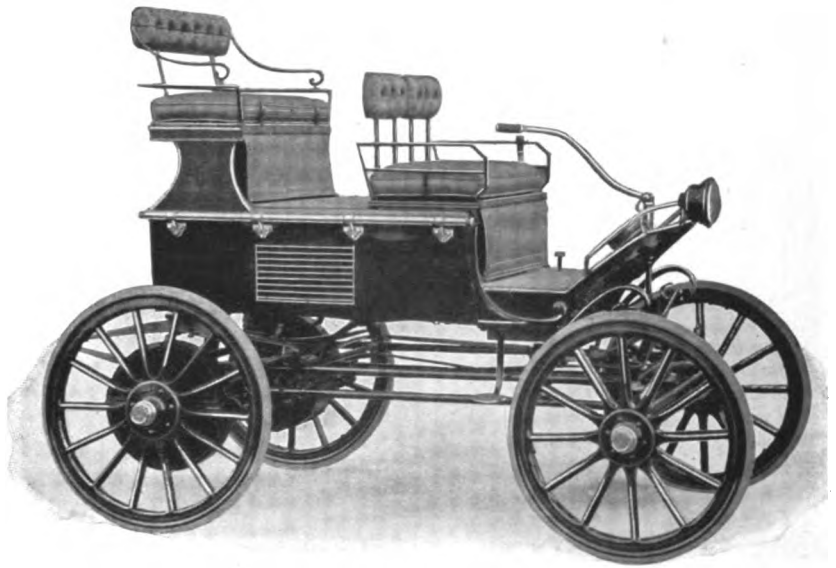
Plate CLVII. Milk Wagon.

See description under "Latest Styles."



**National Automobile and Electric Co.'s  
Combination Delivery and Pleasure  
Wagon No. 1.**

For description, see "Automobile Department."

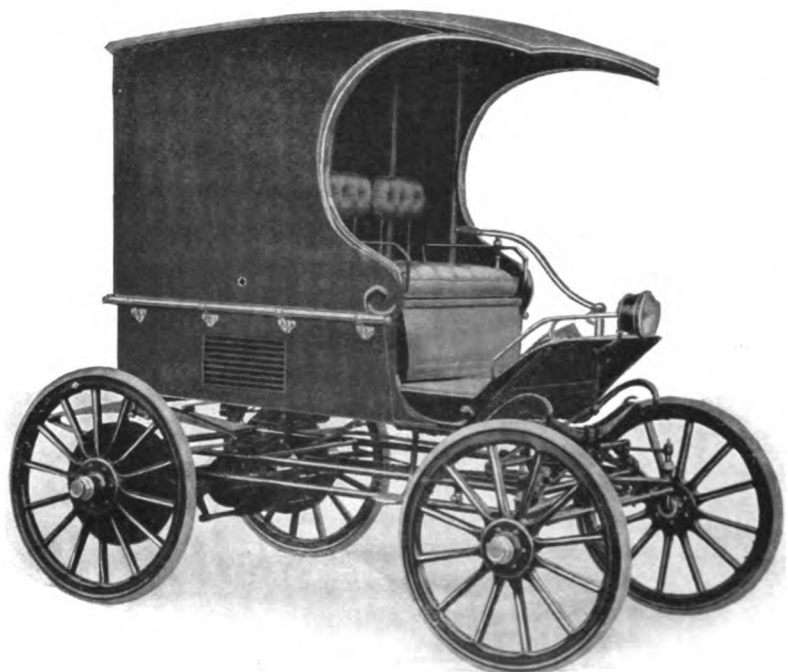


**Canda Phaeton.**

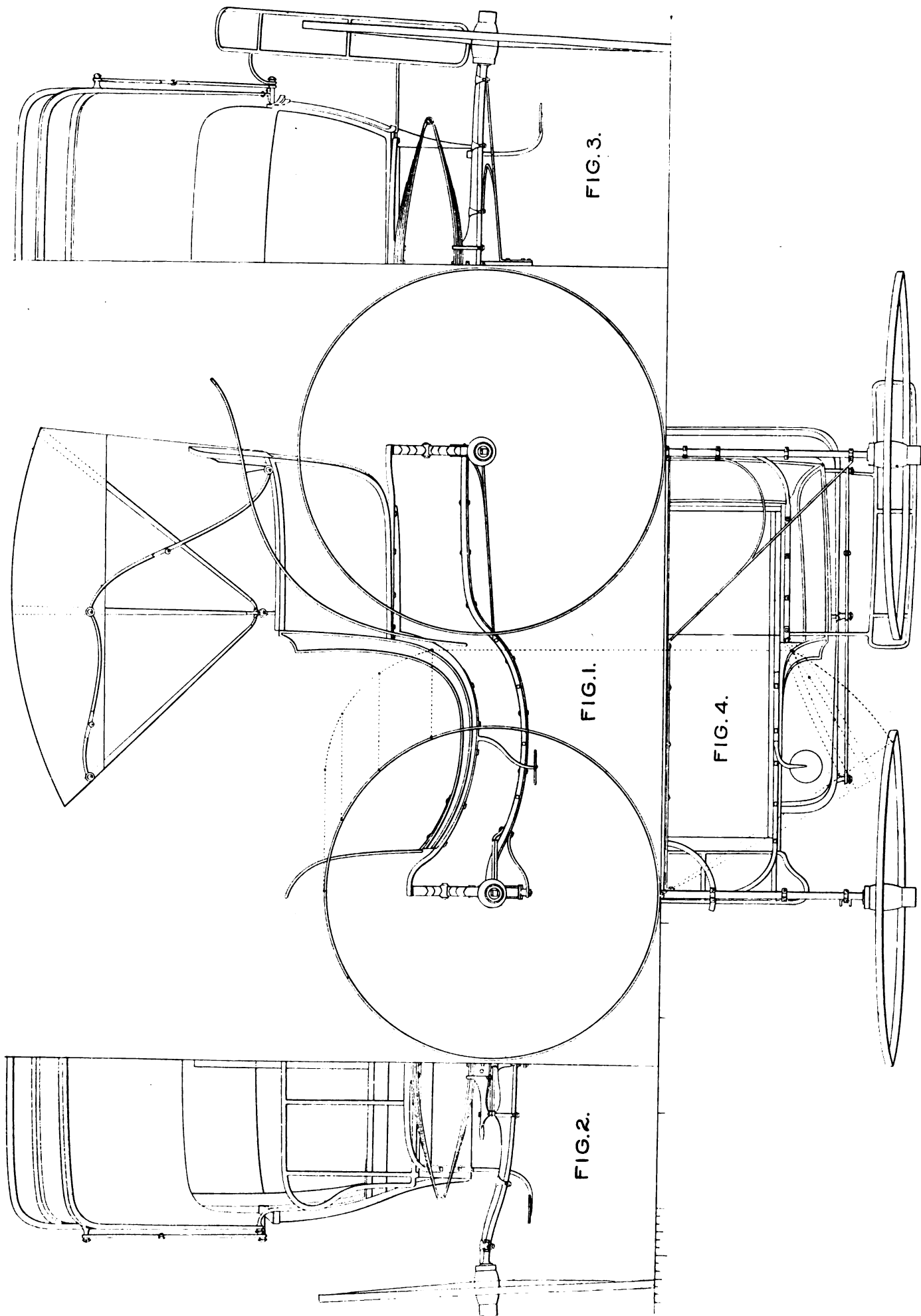
For description, see  
"Automobile Department."

**National Automobile and Electric Co.'s  
Combination Delivery and Pleasure  
Wagon No. 2.**

For description, see "Automobile Department."







WORKING DRAWING OF A FOUR PASSENGER PHAETON. SCALE  $\frac{3}{4}$  INCH TO THE FOOT.



# CARRIAGE TECHNICAL DEPARTMENT.

Comprising the Wood, Smith, Paint and Trimming Shops.

## WORKING DRAWING OF A TWO-PASSENGER PHAETON.

Scale,  $\frac{3}{4}$  in. to the foot.

THE small phaeton such as that shown by our working drawing is a popular carriage, and finds purchasers in all parts of the country. It commends itself to many on account of its low front, which admits of easy access, while the seat is large and comfortable. The popular construction is solid panels for the sides of the body worked to the required swell with all moldings worked on, the duster being sawed to form and worked out. The flare of the side at the top of the arm is four inches. To work out the proper swell the plank should be about two and one-half inches thick. The back corner pillar may be screwed to the quarter panel, and the molding worked on the quarter; but a better plan, owing to the round bend at the lower corner, is to set the corner pillar in its place—that is, five-eighths of an inch from the outer edge of the quarter—and after putting the back panel in place nail on a narrow molding about one-quarter of an inch square with the one corner rounded. The whole molding should be about one inch wide. The thin panel terminates at the top, at the back corner of the armrail, the lazy back being of one-inch stock. The top sweep of the back panel should be about two inches, finishing with square corners at the ends.

The rockers should be of one and one-quarter-inch ash in three pieces, spliced to insure strength. Sawed rockers are sometimes used, but they lack strength even when a heavy rocker plate is used. A rocker plate is a necessity no matter what the makeup of the rockers. The bottom board for the tread should be full one-half-inch thick up fully six inches above the base at the heel, or a stove panel can be put in and worked to shape; this latter being the best plan, but with the exception of factories where machines can cut the staves the bent panel is much the cheapest. The balance of the bottom need not be more than three-eighths inch thick.

The perch should be of bent stock, as it will require less metal to give it the required strength than will be needed on a sawed perch. Fig. 1 shows the elevation plan of body, perch and gear, as well as the top. Fig. 2 shows a half view of the front and showy flare of sides, form of axle and head block and inside measurements of the body. Fig. 3 shows one-half of the rear view, form of back panel, spring bar and axle bed. Fig. 4—one-half of the ground plan—shows the bottom of the body, plan of sides and track of the front wheel.

*Dimensions of Woodwork.*—Body, width across top, 41 in.; toe bracket front, 29 in.; across bottom,  $30\frac{1}{2}$  in. Width of body across top, rear, 40 in.; across bottom, rear, 33 in. Wheels, wood hub. Height, front, 42 in.; rear, 46 in. Hubs, length,  $6\frac{1}{2}$  in.; diameter at centre,  $3\frac{1}{2}$  in.; front end,  $2\frac{1}{2}$  in.; back end, 3 in. Size of spokes, 11-16 in. Number of spokes, 14 and 14. Stagger,  $\frac{3}{8}$  in. Depth of rims,  $1\frac{1}{4}$  in. Tread of rims,  $\frac{7}{8}$  in. Depth of bands, front,  $1\frac{3}{4}$  in.; back,  $\frac{3}{4}$  in. Distance between centre of axles,  $55\frac{1}{2}$  in.

*Dimensions of Ironwork.*—Springs, front, 34 in. long between centre heads, with 6 in. opening on main leaf. Width of steel,  $1\frac{1}{4}$  in. Number of plates, 4. Thickness, Nos. 2, 3, 3, 4 steel. Back, 36 in. long, with  $7\frac{1}{2}$  in. opening on main leaf. Width of steel,  $1\frac{1}{4}$  in. Number of plates, 5. Thickness, Nos. 2, 3, 3, 4. Axles, front,  $\frac{7}{8}$  in.; rear,  $\frac{7}{8}$  in. Tires,  $\frac{7}{8}$  in. by 3-16 in. Fifth wheel, 12 in diameter. Track, outside, front and rear, 4 ft. 8 in.

*Painting.*—Body, Brewster green panels, moldings black with fine carmine stripe in centre. Gear, Brewster green, striped with  $\frac{1}{8}$  in. line of carmine, with a fine line of same color on each side. Trimming, green body cloth, with plain green tufts. Spring back and spring cushion, top hand buffed leather, carpet velvet, bound with broadcloth; back and cushion pipe and point pattern. Finish, dash, curved, four-bar, step pad round with rubber pad; fenders as shown in cut.

## "WORKING DRAWING OF A STANHOPE PILLAR."

THE Stanhope pillar and the manner of laying off is shown herewith. Figs. 1 and 2 give the dimensions and the design of the side and the turnunder. The line E, on the inside of the pillar, Fig. 2, indicates the flare of the side panel of the body, as seen from the front or back, the height of which is 12 in. This line is pertinent to the construction of the pillar, and is the first point to be understood, as through the point *c*, at the bottom on the seat frame, we pass the oblique line D, which is determined by the point *c*, and which must be parallel to the dotted line *c*, drawn touching the turnunder line of the pillar, as a tangent thereto, which serves the purpose of measuring the thickness of the plank required, as well as the working angle of the pillar, hence the parallelogram S Q, and R P indicate the length and thickness of the block, from which we ascertain two of the dimensions of the pillar, the other the width, is given by pattern, Fig. 1. We then construct the vertical line *d*, from the intersection of the base with R, at the foot of the pillar, from which point we proceed to the arc, with the dividers, the several segments from D up to *d*, the vertical line from which we extend the obtained points over to the side, Fig. 1, and through the side to the back edge of NM. For an example, which is a clear explanation of the other eight points taken, let us select that of the point M, Fig. 1, the finished height of the pillar, and carry this across to the line D, Fig. 2, and from R, as the center arc, this point to *d*; thence over to the vertical line T, Fig. 1, and we have in the point O, the lengthened height of the pillar, thus adding the inclination of the turnunder to that of the side. It then only remains to draw the dotted line W, from O to X, as the increased height of the nine points, to complete the side dimensions of the pillar, from which we make the pattern, by which we mark the line, to be band sawed, when the pillar is blocked up, as shown at *g*, Fig. 2, which must be done when the saw table is set square to the vertical position of the band saw. Then in cutting the face and back edges of the pillar B, and *a*, Fig. 1, the dihedral angle, marked out from *b*, in the lines I, J, L, and K, will be obtained in the blocking up of the pillar, as in doing this we saw the pillar while it is in the position for both the side and lateral pose. If carefully sawed much time will be saved in finishing the pillar, as there remains only the work of smoothing with spoke shove and file. When the edges B, *b*, Fig. 1, have been sawed we block up the pillar, as shown at *x*, Fig. 1, and saw on the turnunder, as shown by the dotted line *y*, Fig. 2. Sometimes the pillar is blocked, as shown at 2, Fig. 1. In this case we must set the table to the proper angle in order to obtain the level, so that the surface of the side of the pillar will be parallel to the side panel of the body at all points. The better way, however, is to block, as shown at *h*, then the pillar will be sawed while in the position which it occupies when fixed to the body. Fig. 3 shows the pillar as seen from the bottom, obtained by taking the amount of turnunder, from F to C, Fig. 2, and carrying this horizontally across to the same height, as in Fig. 1, and thence vertically to the tangent *t*, Fig. 3, setting in this amount of the eight points, as projected in the plan. Every edge of the pillar is very carefully worked out. Fig. 4 is a plan view of the pillar, as seen from the top, and of course is a facsimile of Fig. 3.

In blocking out the pillar, as per drawing, we work on the dihedral angle, in the sawing of the pillar. The dihedral angle is that angle which is dressed onto the edges of the pillar, that will be at right angles to the side surface of the body, when set up in the position, Fig. 1. To obtain this bevel, we can at any convenient height, as at *b*, Fig. 1, on the horizontal line No. 6, construct the right angle I, to the back edge of the pillar, and at this height take the distance from *d* to *c*, Fig. 2, and carry this to K, and set out to L, and from *d* draw the line to J. This line and the back edge of the pillar gives the angle required. In dressing the back edge face of the pillar



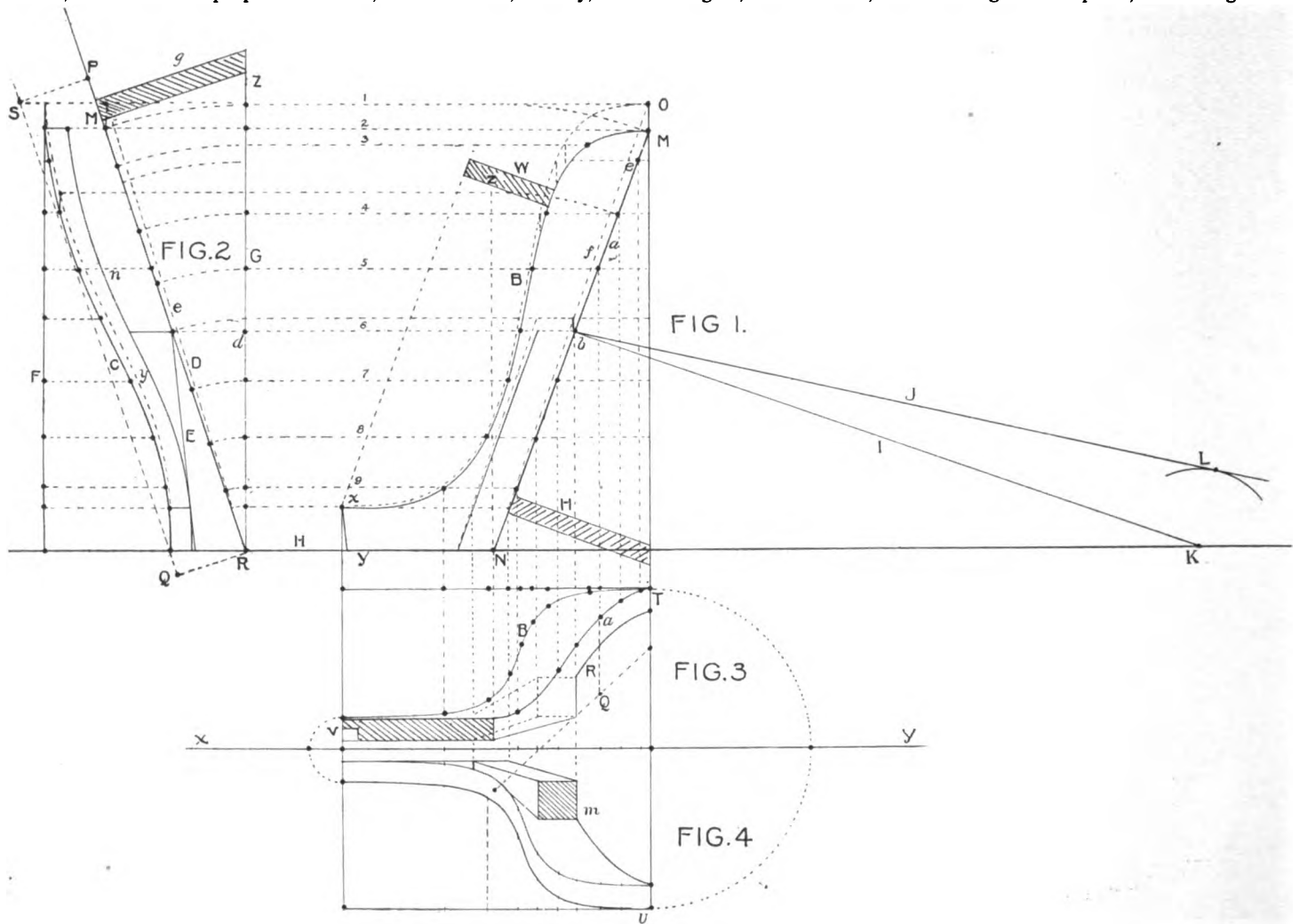
alone the line *b*, we take the required amount off toward the outside, as that of *a*, in the projection, Fig. 3, holding the stock of the bevel against the line *D*, of Fig. 2, the same as it would be done if worked out by hand, but when band sawed this is unnecessary if correctly blocked up.

It is well to explain that the intersecting points which appear on the drawing are necessary in order to obtain the pattern for the working of the pillar, and that these same points are not required by the body maker in working out the shape and the dimensions of the pillar. The pattern, when correctly made, takes the place of all this, the points and multiplicity of lines only appear on the draft, not on the pillar itself. The lines, however, go to point out the way that the projections were obtained.

There are other methods by which this pillar is and has been worked out, but all of them in the end bear upon the principle illustrated here. The French have a method all their own, the English have another, and for aught we know, the Germans may have a system of doing the work of which the writer is not familiar, but the result, no matter the people or method, is alike in all, namely, that

when finished and set up, 3 in. shorter than it should be, hence the amounts double, as shown at the point *e*, Fig. 1. That is, that if we make the pattern according to the lines *N* to *M*, *N* to *Y*, *Y* to *X*, and *X* to *M*, the pillar when cut to these inclosed lines would be 3 in. instead of but  $1\frac{1}{2}$  in. too short. The reader will agree with us on that point if he will consider the drawings and thereby test them with a pair of dividers. Let us emphasize this statement in a more comprehensive manner, if possible, by adding that since it is imperatively necessary to raise the point *M* to the height *O*, according to the arc *i*, as determined by the fall of the pillar, from this height to the point *M*, of the turnunder, Fig. 2, then by the same course of reasoning, if we do not raise this point  $1\frac{1}{2}$  in., it will necessarily, by a like process, fall  $1\frac{1}{2}$  in., which would bring the point *M* down to *C* instead. In any event point *M*, the designed height of the finished pillar, will be disturbed the moment that we give to the pillar a second inclination, this movement is downward, and if not added to the side will always fall below the desired height, according to the turnunder.

Again, the line *NM*, the back edge of the pillar, is no longer the



WORKING DRAWING OF A STANHOPE PILLAR.

a pillar inclined, contracted, and pitched to an outward sail, requires a draft to demonstrate its length, width, thickness, position, and projections which cannot be determined in any other way. More is known now of this pillar than was known fifty years ago, but it is not reasonable to suppose that improvements will appear as fast in the future. The only position that this pillar does not occupy, which a pillar like this can be made to fill, is that in a contracted direction. Here the side surfaces of the pillar are parallel to the sides of the body and to the axis, demonstrated by the line *XY* of the horizontal plane.

From what has been said, it must seem clear to the mechanic that if the top of the pillar falls  $1\frac{1}{2}$  in. in reaching its position and the turnunder, that to overcome this the amount must be carried over to the side and added to the designed length of the pillar in order that the seat panel shall be  $11\frac{1}{4}$  in. high above the seat frame, as measured by the drawing, and, further, that if this should not be done, the pillar would  $1\frac{1}{2}$  in. too short, or, in other words, if we should fail to do this through ignorance of the conditions, the pillar would be,

line of pitch to the side, but that of *f*, the dotted line from *N* to *O*, instead is the line to which we should shoulder up the arm rail, which is a trifle less acute. Consequently the flare of the turnunder will be likewise affected, and for the same reason, as already specified, for the dotted line *C*, from *R*, the foot of the pillar to the height *M*, in the straight line No. 1, of Fig. 2. This being true with this angle, it is also clear that the curve of the turnunder will for the same reason be affected by the lengthening of the pillar caused by the inclination of the pillar, as shown in the side, Fig. 1. We have provided for this in the dotted line *y*, Fig. 2, the line to which the turnunder pattern must be made, and not to the full lines of the turnunder, as designed at the height of the straight line, No. 2.

We have gone sufficiently deep in the subject, as we have made the drawings correctly. We have also illustrated and explained how to obtain the patterns, then how to block up for the sawing of the pillar, and finally find the correct height which applies to all points on the surface and edges of the pillar. The drawings, Figs. 3 and 4, assure us of the appearance of the edges of the curved surfaces when

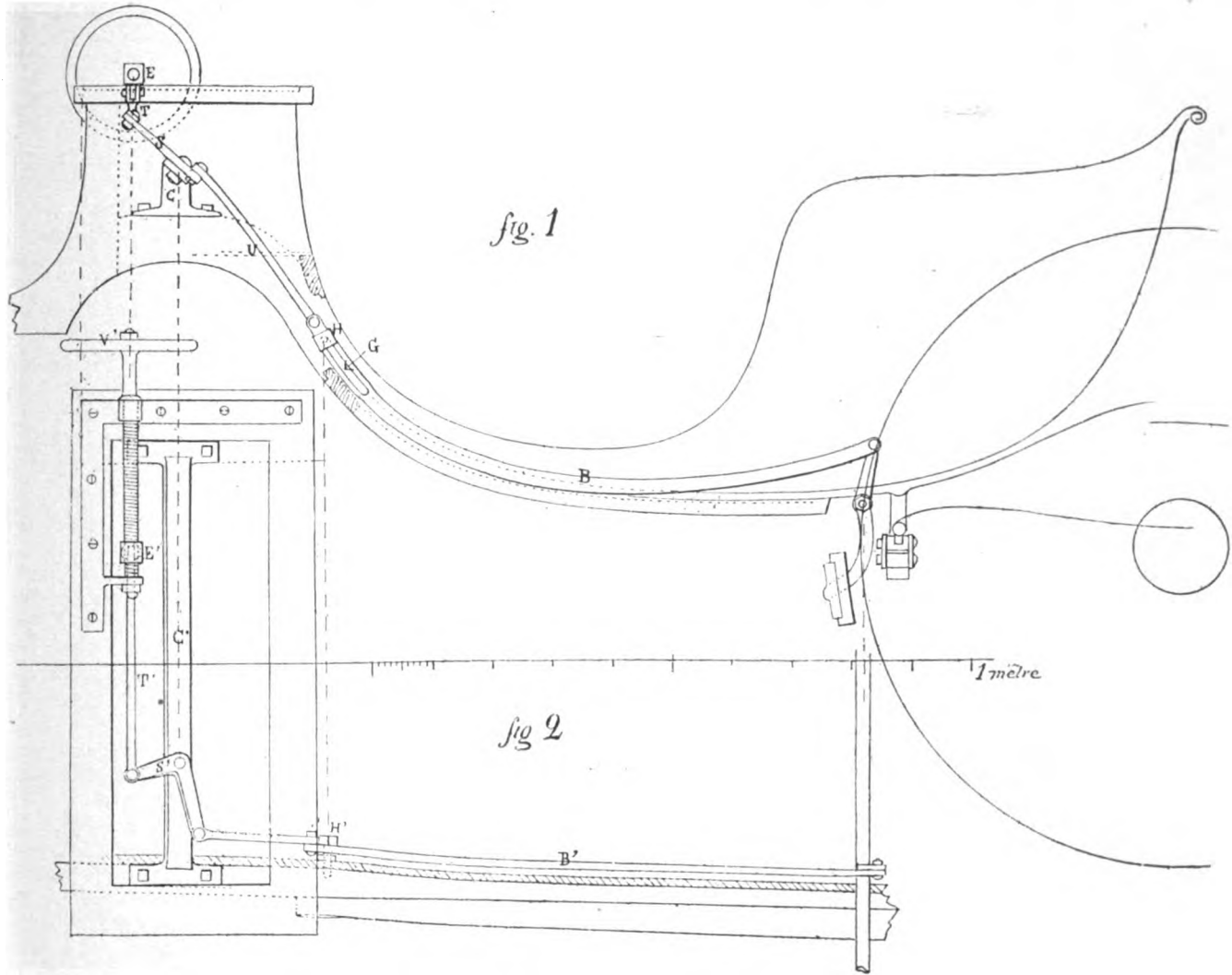


observed from any angle, as in a perspective position, and that the curve of the turnunder harmonizes with the curve of the side, that the reverse curve of the turnover is more appropriate than a round sweep would be. The edge, B, the intersection of the side with the front surface, is a fairly turned line, as illustrated in Fig 3, and corresponds with the edge B, Fig. 1. The line a, Fig. 3, indicates the projection of the line NM, Fig. 1; the line q, Fig. 3, the line projected in the plan from the inclination of the line D, Fig. 2, from R to P.

BRAKE FOR A CABRIOLET.

THE illustration herewith is from *La Carrossier Française*, and shows the working of a brake for a round bottom cabriolet. The illus-

link between the flange A, and the box or socket B, the whole being in normal position as applied to a vehicle. To give a clear view of the socket part in Fig. 2 we give a side view of which A is the section of the flange plate; B, the socket or box; C, the upper part; D, lower part; E, the web connecting the box or socket with the flange plate. This part of the prop requires no fitting, other than by machine, and as a matter of economy is usually made or cast from some of the soft amul gums, such as zinc and copper, or zinc or copper with aluminum. When to be silver or nickel plated Prince's metal or German silver are the best compositions. The fact that this is to be secured to the lamp body by the sweating process, the amalgams above mentioned are much the best to employ. To some of our readers the "sweating" may be unknown—therefore we give a brief description of the process. Therefore that part of the prop to be secured to the



BRAKE FOR A CABRIOLET.

trations, Figs. 1 and 2, show the elevation and ground plans. In order to permit its working on a body of this kind, it is necessary to place the anchor arm and the connecting arm at an angle. In the illustrations, Figs. 1 and 2 V V, show the operating wheel connected with the parallel arm T, the screw portion of which passes through the nut E. The end of T being bolted to the short arm of the anchor lever S; this being secured to the supporting post C, the arms of which, in turn are securely bolted to the seat frame. The main lever bar B is connected to the anchor arm by the flat bar U, the ends of which are secured by bolts. The main bar B is curved at the front end and is slotted at G, to pass through the collar H. The rear end is attached to an independent lever, which operates the brake rod and the shoe lever, carrying that against and from the rim of the wheel at the will of the driver.

AN IMPROVED LAMP PROP.

THE lamp prop herewith illustrated and described possesses features which make it one of the best and cheapest yet offered to the trade. Fig. 1 shows a front or flat view of the socket section; A, the flap or flange plate; B, the circular conical box socket; C, the enclosed top with the hole F, for the insertion of the set and pulling screw; E, the bottom of the conical socket; D, the inner or connecting

body of the lamp is tinned—covered with the hand solder. Tin is also applied to that part of the lamp where the prop is to be secured. When all is ready the prop is placed in position and held there while

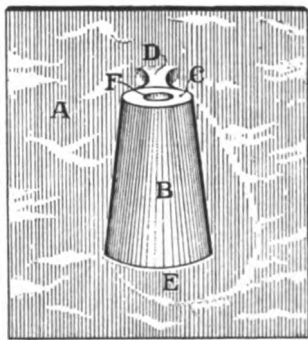


Fig 1.

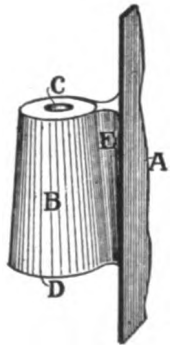


Fig 2.

the operative passes the hot soldering iron over the outer part of the prop or flange, A, Fig 1, until the solder melts and a union is formed between the prop and the lamp.

The socket part is usually made in two sizes, the heavy size suita-



ble for broughams, etc. The smaller size for phaeton and lighter work. Fig. 5 shows where the plate is convexed horizontally to suit a lamp with a swell at the back, in order to place a convexed reflector at the back of the lamp. A, body of the socket; B, bottom C, top; D, web connections between plate and socket; E, section of plate to show how to convex. Fig. 4 shows a portion of that portion of the prop which we will call the stem, which is secured to the body or at such point as required. A, the conical part, which enters the conical box or socket; B, the top, fitted with a hole for the screw; C, the finish from the conical section to the stem section D, which we weld to the part to be attached to the body. This kind is made to apply to jobs where sweeps or curves are necessary to get the lamp in proper position. Fig. 5, A, conical part of stem which fits in conical socket; B, top, with hole for screw; D, section of stem, which is

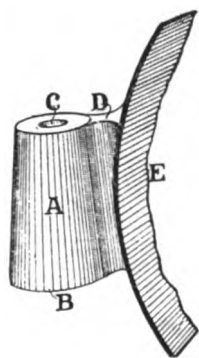


Fig. 3.



Fig. 4.

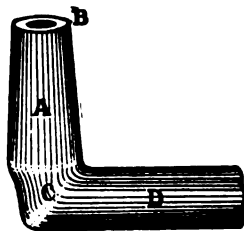


Fig. 5.

to be welded to the part to be secured to body; C, finish from A to D. This method is calculated to be used for jobs where the lamp has to be secured to the pillar, such as broughams and others where the lamp sets close to the body and from their shape can be made short and with as limited bending as possible.

A set of pulling and securing screws with a square head and threaded end passes through the hole F, Fig. 1, and is inserted in the hole of Figs. 4 and 5, and when set home has the faculty of securing the two parts and also of drawing them together and thereby preventing any rattling. Make plate A, Fig. 1, for heavy vehicles  $3\frac{1}{2}$  in. long by 3 in. wide. Make the socket box B 3 in. long,  $1\frac{1}{8}$  in. diameter at the bottom and 15-16 in. at the top. Diameter of the hole at the bottom of B,  $\frac{3}{4}$  in., taper the hole  $\frac{1}{8}$  of an inch. For small size reduce length to  $\frac{3}{4}$  inch and diameter in like proportions.

The part, as shown by Fig. 1, is cast from patterns furnished with care, which forms the hole, the hole being subsequently reamed with a fluted taper reamer of size to suit. Figs. 4 and 5 are best when made in dies, which save labor in machinery in fitting in B, Fig. 1. It requires some little labor to make the pattern, if from metal, for the box and flange part. The patterns may first be made of wood and afterwards used for models. The cone points are best made of iron. Wood is good enough for the cone boxes.

#### THE FLATTING OF VARNISH.

ONE of the most difficult things for the painter to satisfactorily explain to his patron is described by the above caption. Because we hear less of the trouble than formerly, it must not be presumed that this particular kind of deviltry has perished. Car painters complain bitterly of this evil, and journals devoted to that branch of painting frequently teem with matters pertaining to the subject. It is pretty generally conceded, however, by both car and carriage painters that a very great preponderance of varnish flattening is due to spongy, porous undercoats. Mr. O. A. Hubbs, foreman painter of Southern Pacific Railway, became so annoyed in respect to the varnish flattening on the equipment of his road that, after ineffectually trying to overcome the difficulty by using rubbing and hard drying varnish mixed, and also by using a thin coat of varnish cut out some with turpentine, he ran the cars after putting on the first coat of varnish out into the sunshine and permitted them to remain until "Old Sol" had driven this coat nearly or quite out of sight in the old paint foundation beneath. This varnish, under this fairly heroic treatment, went in, and became a part of, the spongy porous paint. Suction and all power of absorption were thus effectively checked, and the varnish applied later remained in place and in the full strength of its natural lustre. Of course, such treatment which in the above instance proved a successful remedy, is not available in the carriage paint shop, but it serves to indicate a means of overcoming the evil when it presents itself.

It is an indisputably authenticated fact that a varnish surface flattened after going into service, and then returned for immediate re-varnishing, is not as durable as the same surface would be if holding its original lustre from the initial coat out. The importance then of preventing flattening of varnish, rather than attempting to cure it after the mishap has actually occurred, becomes at once clearly apparent.

The carriage painter who has much repainting to do finds the old spongy, porous surface a hard proposition, unless he is permitted to apply the burning torch. The sun bath being out of the question, he must accept the next best thing that offers. Hence he resorts, or rather should resort, to artificial heat. The cold, damp days of spring and summer are prolific breeders of varnish flattening in case of old paint surfaces. These surfaces have from their moisture-laden surroundings absorbed a full measure of dampness, and unless a good heat from stove or steam pipe is turned abroad to dry the surfaces out and heat them properly to receive the varnish, trouble is pretty sure to overtake the painter.

Over a considerably worn and porous paint surface it is advisable to transgress the laws of latter day painting, to the extent of mixing the color used, upon such a surface, with a fairly stout binder of raw linseed oil, instead of varnish. Granted that more time is required for the drying of the oil color, yet, on the whole, it will prove to be economy, both in time and money. The penetrative power of raw linseed oil here displays itself, and into the porous paint it strikes, there to perform the same office that the sun-baked varnish, above referred to, was made to do. The oil not only serves to seal up the porous nature of the old paint, but to check its absorptive power as well. This operation results in leaving the varnish coats on the surface where they belong, and where they may retain the strength needful to their lustre and durability.

Even when the presence of moisture is not to be reckoned with, color carrying an oil binder, will furnish the old paint foundation with that element which the initial varnish coat, and even later ones are forced to supply. It is not expected that a dash of oil in the color will suffice to prevent flattening in all cases, but an oil bound color, dried thoroughly in by strong, dry hot air, is a step toward prevention the value of which it is not easy to overestimate.

#### THE LAKES AND WINE COLORS.

THE above class of colors continue to be much sought for by a great number of very critical vehicle users, notwithstanding the fact that durability in these colors has long been a subject for dispute among trade experts. Some of the lakes are especially beautiful in the depth and richness of their colors, and they take kindly to striping effects. Nothing in the line of solid colors quite approaches them. Munich lake, carriage part lake, purple lake, Cramoisie lake, carmine lake, American crimson lake, chatemuc lake, and the reigning favorite of the season, maroon lake, serve a purpose in the color world which no other pigments can. Take the darker of these lakes, carriage part lake, for example, and stripe with heavy lines of black; or, for a heavy gear, stripe with a  $\frac{3}{8}$  in. line of black and edge with a fine line of gold bronze and you have something at once striking and elegant. Or stripe with two round lines of black  $\frac{3}{8}$  in. apart and cast a fine line of twentieth century red at the centre between. Cramoisie and purple and Munich lake do not show quite strong enough effects under black lines, unless gold is used to edge, or split the lines, thus drawing out the contrast between colors; but these lakes look charming if striped with what is known as the graduated stripe, as for example, draw the first line with madder or eastern red, and the next line liping onto this toned down somewhat, thus continuing with lines sufficient to cover the desired width of stripe, the final line being but a shade or two lighter than the ground color itself.

Chatemuc lake yields particularly fine color effects under this style of striping. English crimson lake, brilliant scarlet lake, and brilliant lake show rich and rare color effects when striped with the graduated line. As a matter of fact, the graduated stripe would long since have come into more general use on lakes, wines and reds, but for the difficulty attendant upon the work and the extra expense involved.

The wine colors show especially handsome shades, as put forth during recent years by color manufacturers.

There is superfine light wine color for one extreme and wine color, dark, for the other, and between are two or three beautiful shades of this color. For business wagon running parts the medium wine color applies to excellent advantage. One sees this shade used extensively upon the running parts of fine apparatus wagons. It makes a wonderfully effective background for lavish gold leaf decoration. For surrey



running parts, brilliant wine color applied over a ground of dark Indian red offers pretty effects when striped with  $\frac{1}{8}$  in. lines of black  $\frac{1}{4}$  in. apart, with a hair line of gold running at the centre between. Or reversing this order, use a  $\frac{1}{8}$  in. line of black and run distance fine lines of gold  $\frac{1}{4}$  in. from the black. To still further vary the striping use  $\frac{1}{4}$  in. line of black, and edge with fine lines of gold. This same shade of wine may be striped with double fine lines of primrose, yellow, or twentieth century yellow, and the effects are sure to excite compliments. Light wine colors invite black lines for striping. These colors always harmonize, and while the contrasts are modest, they are withal elegant. Use for striping three fine lines of black  $\frac{1}{4}$  in. apart, or two  $\frac{1}{8}$  in. lines of black  $\frac{3}{8}$  in. apart, with a fine line of black at centre, between, or reversing this order, use  $\frac{1}{8}$  in. lines, with distance fine lines, all of black. One may use black in a great variety of styles and in no wise depart from the laws of good taste. Most of the lighter shades of wine color are effectively used over dark Indian red grounds. This same red darkened with drop black makes a suitable ground for the darker shades of wine color. Indian red, a durable color in itself, yields a good, strong ground for these somewhat shifty, and in a measure, sensitive colors. All lakes and wines are governed in point of durability, very largely by the nature of the ground color. The fading property of these colors is pronounced, and the painters point of vantage is gained by using a foundation possessed of strongly developed power for counteracting the fading propensity. Indian red, and Indian red and black, carrying a stout binder of varnish, offers this sort of a foundation, granting, of course, that the foundation as a whole has been skilfully prepared. The lakes and wine colors are indispensable in carriage painting.

#### SOME OTHER CAUSES OF VARNISH FLATTING.

UNSEASONED WOOD causes a varnish to flat, as does also imperfectly dried undercoats. The first cause the painter is in no respect responsible for, although in the final reckoning he is usually held as the gay deceiver. With the scientific agencies at command for the quick, sure drying of timber, there is small excuse for using unseasoned material in vehicle construction. Imperfectly dried undercoats the painter is not invariably responsible for, either. The inexorable logic of the office operates very often against the best judgment of the painter, against his practical knowledge of cause and effect. Hurry it through, is the shibboleth that stirs him to extra exertion, at the risk of the varnish going dead or flattening. Between the shop office and Mr. Customer-In-a-Hurry, the painter is forced to work over coatings which his expert information tells him are not dry as they should be. With true paint shop spirit he takes chances and gets the work out within the prescribed time limits. If it goes through without flattening well and good. If flattening ensues the only alternative is to charge the varnish as possessed of an able bodied deviltry, and try again. Giving each coat the necessary time in which to dry will check one source of flattening.

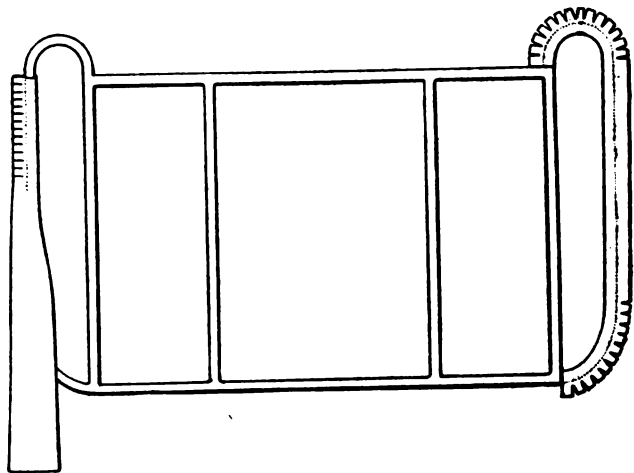
The surfacing of rubbing varnish should also be done, or at least the final surface should be, the same day the succeeding coat of varnish is applied. From the primitive days of the art until now a surface of varnish once rubbed and set aside over night will accumulate a greasy scum, due to atmospheric impurities, which if not removed by a second rubbing prior to the next application of varnish, will cause deadening, flattening, pitting and various other vivid deviltries of the same order.

The surface that gives perfect satisfaction is the one that receives a final rub over with rotten stone, just before applying the varnish, and after being rubbed with rotten stone, followed by what is known as the water rub, i. e.—a rub over the surface with a pad dipped simply in water and carrying no pumice or rotten stone flour. This shapes the surface to look at its best under varnish—and the varnish holds true.

#### DASH HANDLES.

THE illustration shows a simple plan for covering dash handles, leaving the stitching on the outer edge of the bar. Those who have tried every other way imaginable to cover dash handles with the stitching on the outer edge of the bar and failed, will smile when they see this simple illustration.

To cover dash handles in a perfect manner means the selection of good grain leather of medium thickness. The handle bars must be smoothed off with fine sand paper and cleaned with a greasy cloth. The flesh side of the leather must be dampened and the grain side greased over with tallow and applied to the flesh side.



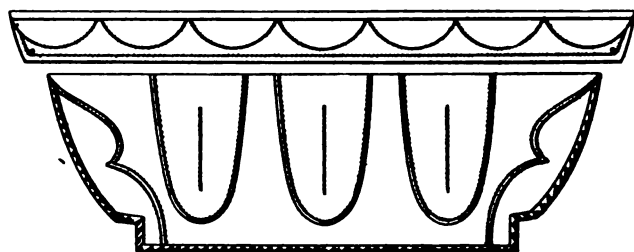
DASH HANDLES.

A part of the leather must be worked over the handle bar and stitched, as shown at A. After that much of the cover has been stitched the surplus leather above the stitching can be closely scored with a sharp knife, and in a gentle manner the leather be worked around the bend of the handle, using a suitable tool to rub out the small wrinkles on the inside of the cover.

For the lower part of the handle the leather will only require close basting, which is done on the straight part of the bar. The leather to be scored and worked over the bend in the same manner as the top of the handle. The balance of the cover to be basted on and the stitching finished. B represents the work done to the cover ready for the edge to be trimmed off.

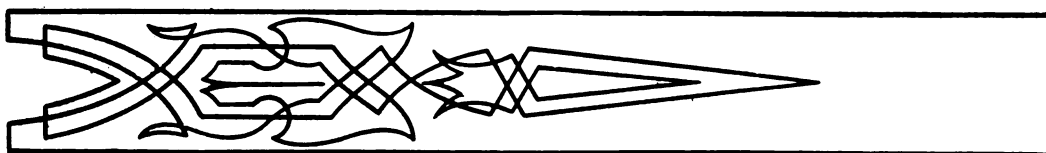
#### SEAT FALL AND VALANCE.

THE illustration herewith shows a pretty design for a seat fall and valance suitable for surreys and phaetons. The fall is made on a stiff backing, a piece of thin black canvas, with one ply of buckram well pasted together. The curve lines at each end of the fall are



SEAT FALL AND VALANCE.

formed of a piece of thick top leather cut  $\frac{1}{4}$  in. wide worked up in form of a cord. Make the patterns of thin straw brand for the three centre pieces. Work them off on the rough lining in proper place: cover the surface of the rough lining with thick wadding cut away from the edges and around the leather cord and the pattern marks. Apply paste around the edges of the leather cord and over the sur-



ONE-HALF, FINE LINE, BELT PANEL ORNAMENT.

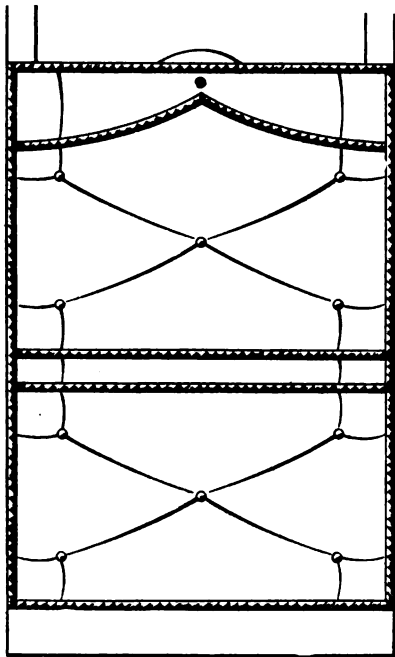


face of the pattern marks and around the outer edges; draw the cloth over and press it down on the pattern spaces and keep it in place by the patterns placed on the cloth, secured by pointed tacks around the edges. Then work down the cloth around the leather cord and around the edges. Make the three centre pieces on buckram with muslin pasted over one side; shape out the buckram to the size of the patterns. Cover the white surface with thick wadding and trim away from around the edges and cut through along the centre stitching line. Apply paste around the edges to a space  $\frac{3}{8}$  in. wide or enough pasted space to allow a row of stitching close to the edge of the pieces. Place the cloth over the wadding and work down around the edges and paste over on the back of the piece. Paste the back surface of the pieces over, but not too near the edge. Remove the pattern pieces and put the pieces in place with pointed tacks around the stitching line. Baste the cloth over the centre stitching lines to the rough lining with a very small stitch on the cloth side and a medium one on the back. Stitch in the basting threads with the machine. Finish the edges of the fall with pasting lace, stitched on both edges on the machine.

Make the backing for the valance of dash leather, the width of the valance when finished to suit the fancy of the trimmer, or as the seat may require. Two-thirds of the width of the backing must be re-enforced with thick top leather, which may be cut to fancy shape, but in separate pieces. The pieces must be pasted close along the top edge. Cut the material for the cover wide enough to paste over the edge of the backing and on top of the seat board, as indicated by the dotted lines in the sketch for stitching. Finish the top of the seat valance with a covered cushion stick.

#### TRIMMING DESIGN SASH DOOR FOR DEPOT WAGON.

THE accompanying illustration shows pleasing and inexpensive design for trimming a door for depot wagon. Make up on a rough lining composed of one ply of buckram and one piece of duck canvas well pasted together. When dry fit it to the door  $\frac{1}{4}$  in. scant to the edges all around. Skive off the edges of the rough lining so as to make a thin surface for the pasting lace. Mark off the design on the rough lining as shown. Make small holes with a punch for the tufts. This design is suitable for either cloth or leather.



SASH DOOR FOR DEPOT WAGON.

Cut the material in one piece and do not allow for fullness either way between the tufts if the material is cloth. If leather allow  $\frac{1}{8}$  in. each way between the tufts. Fold the goods along the tuft lines on the wrong side of the goods and stitch near the edge of the fold. In stitching the folded parts no calculation need be made for the pasting laces crossing the stitched parts. Paste thick sheet wadding over the rough lining with the top surface taken off and the wadding cut away from under the pasting laces. Apply paste on the lines across the rough lining where the laces are to go. Draw the goods over and work down along the centre pasted lines, and hold

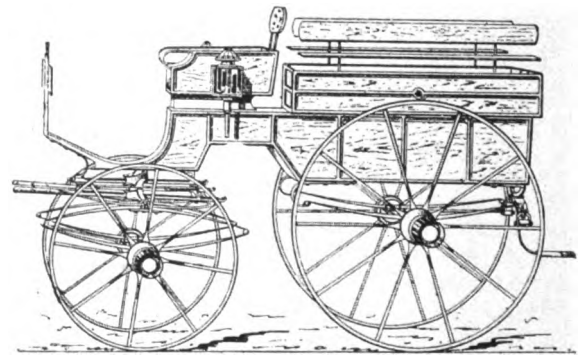
in place with leather strips or pieces of wood tacked along the lines. Treat the upper curved lines in the same manner. Draw the tufts in and fasten with a small nail through the eye. Paste the material down along the edges of the rough lining, remove the pieces that hold the pasted parts down and paste the pasting laces, which have been previously prepared for the purpose on and tack the strips on again, and allow the work time to dry, after which stitch down the laces near each edge on the machine. Before tacking the squab to the door paste a layer of hair over the lining boards. Finish off the edges with pasting lace. Make the cushion front in the same manner except the centre part between the two laces. This must be reinforced with leather instead of wadding.

#### FOREIGN STYLES.

WE publish this month several illustrations of vehicles from foreign carriage journals showing a few developments from the foreign workshops. THE HUB holds that good things from abroad are always serviceable. In many cases the individual carriage would be unsuited to American markets, but they may possess features that can be engrafted upon American designs, or, by certain changes, the vehicles could be made advantageous to American builders, and in accordance with that view we give up a portion of our space to these reproductions and reprints of their description. The French do not go into details of construction to the same extent as the English, and such as we give of the former is based upon the French without an attempt at a literal translation.

BREAK.

This carriage is a companion vehicle to the rustic cart and is also taken from the French journal, *La Carrosserie Francaise*. The seat

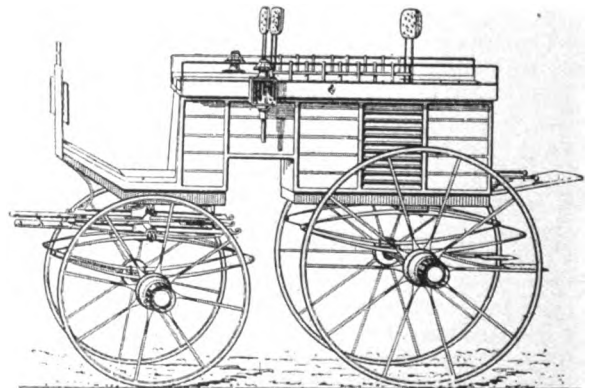


BREAK.

and brakes are changed and the molding is simple and in keeping with the demand of the times.

RUSTIC CART.

This illustration is from one that appeared in *La Carrosserie Francaise*. It is modeled after the mail cart, but is much more simple in its construction, and makes a very convenient carriage for summer resorts.



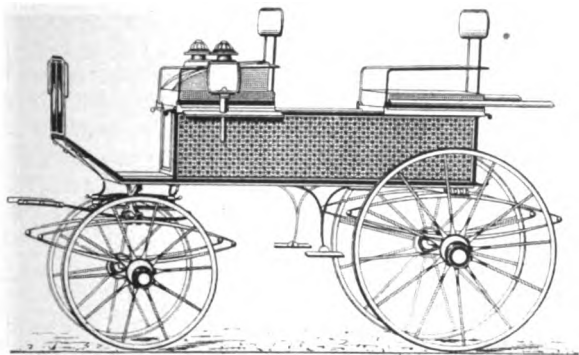
RUSTIC CART.

There are points in this design that can be adapted to American vehicles to an advantage, the interior being sufficiently large to admit the carrying of dogs for hunting tours, and for baggage when traveling.



CHAR-A-BANC.

The char-a-banc, illustrated herewith, is from *Le Guide du Carrosserie*. It was specially designed as a hunting wagon, and therefore

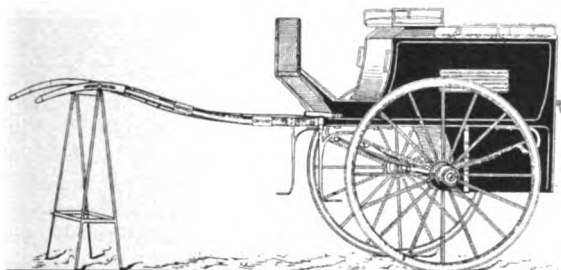


CHAR-A-BANC.

made as plain as possible. The frame work of the body shows at the top, bottom and ends, the panels being stayed by inside posts. The seat frames are secured to the top rails and give support to the top of the frame. Access is had to the rear seat by the long shank steps at the sides. The frame is painted black, the panels and carriage part being finished in the natural wood, striped vermilion. Trimming, brown morrocco.

BAKERS' TWO-WHEELED VAN.

The design herewith of a two-wheeled bakers' van cart shows a departure from the usual style. The body is roomy without undue weight, and its capacity is restricted to no more than is necessary in a covered cart of this character. The body is well shaped behind; the bottom in line with the bottomsides is boarded up to the doors, thus allowing the welled portion to be used in carrying flour and other particularised bakers' goods, apart from the body itself. The body is made with solid sides which are boxed back from the bottomside 1 inch, and the pillars, back and front, together with the



BAKERS' TWO-WHEELED VAN.

top moulding rail, are planted on and fixed with screws from the inside, thus giving the appearance of a framed body, yet having the strength of solid sides. The venetian space is cut out of the side, and the venetian slats framed into the side in the usual way. The shafts are bolted to the bottomside on the inside, and are strengthened with wood brace stays. The side of the shaft next the bottomside should be strengthened with a thin edge plate from the back of the shaft to the front of the bottomside, through which the bolts pass when fixed to the bottomside. The back part of the body is framed and panelled over, venetians being framed into the door. The door can be made either the full width between standing pillars, or in halves.

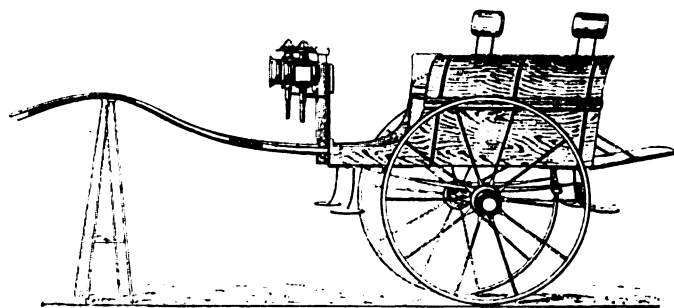
The front seat is best made to slide on the top of the rocker sides so as to alter the balance of the cart when empty.

Fig. 1 shows side elevation; Fig. 2, half back; Fig. 3, half front; Fig. 4, half plan. The sizes are as follows: Height of wheels, 4 ft. 6 in.; strength of spokes,  $1\frac{3}{8}$  in.; tires,  $1\frac{1}{2}$  in. by 9-16 in., other sizes to Warner patent standard. Length of springs to centres, 41 in.; 7 plates 2 in. wide; compass over all,  $7\frac{1}{2}$  in. Depth of hind scroll,  $6\frac{1}{2}$  in.; front ditto, 5 in. to centres. Length of shafts, 6 ft.  $2\frac{1}{4}$  in. by  $2\frac{1}{8}$  in. Brace stays,  $1\frac{1}{2}$  in. by  $1\frac{1}{4}$  in. Depth of body sides, 24 in.  $1\frac{1}{2}$  in. round on roof. Length of body on top rail, 44 in.; length of body on bottomside line, 5 ft. Depth of side from bottomside to platform,  $4\frac{1}{2}$  in.; full length of bracket, 15 in.; depth of dash, 15 in. Width of shafts between points, 24 in. at tug stop. Height of shaft from ground to underneath tug stop, 48 in.; height of bottomside of body from ground, 40 in. Length of Collinge axle over solid collars,

44 in.; over solid flaps, 40 in.; width of flaps, 2 in., length 5 in. (butterfly). Length of boxes, 9 in.; strength of axle,  $1\frac{3}{8}$  in. full. Full depth of body behind, 3 ft. 7 in.; width of hind quarters,  $8\frac{1}{4}$  in.; depth of doors, 40 in. (these can be made either in halves or the full width between pillars, as already explained). Height of step from ground,  $19\frac{1}{2}$  in.; between double treads, 19 in. Painting: French grey body, black mouldings; under works, vermilion, picked out and fine-lined black. Price, 35 guineas; lettering extra.—*Carriage Builders' Journal*.

CHARETTE.

The charette herewith is from *Le Guide du Carrosserie*. It is simple in its construction and very neat in appearance. A feature of its



CHARETTE.

construction is the manner in which the body is suspended at the rear, the ends of the side springs being toggled to C-shaped springs.

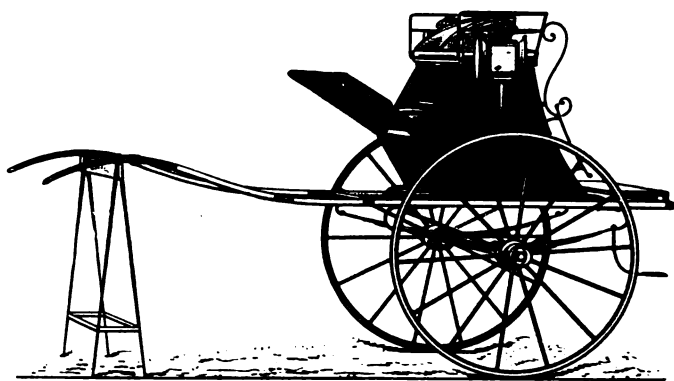
HORSE BREAKER'S EXERCISING GIG.

This two-wheeled gig is specially designed and adapted to the breaking of horses. In many cases, horse breakers' vehicles are hydra built, and the fitting together of several parts of second-hand carriages to build up the style of trap necessary for the work. This way of supplying a horse breaker's wants has on its side the value of economy perhaps, because of the dangerous character of his calling, and the liability to a break-up from vicious and high-spirited animals.

But this is all in favor of a specially designed vehicle, because the required conditions can be worked to and provided for structurally in building. Our design embodies in its structure all the points that are of moment to the horse breaker, either in breaking a horse or in exercising valuable animals in the ordinary course of such professional work.

The body is driving-boot shaped, and designed so as to give the driver a powerful command over the horse or horses when driving tandem. This cart is also an indispensable vehicle to coachmen in the stables of the nobility and gentry who have large establishments and valuable horses to be kept in proper driving, training and exercise.

In making the body, it is necessary that it should be framed rather



HORSE BREAKER'S EXERCISING GIG.

than made of solid sides. The framing bars are made of 1-inch ash, and half checked together. The bottomsides and cross bars are framed in the ordinary way. The bracket is made to come level with the framing, and carried right down to the bottomsides, it is strengthened with an edge plate coming down the side and down the front pillar of the body, taking the cross bar with an L foot. The sides of the body are panelled over with  $\frac{1}{4}$ -inch mahogany, which should be canvassed and dry before it is pinned on, and glue blocked to the framing. The body rails are forged with centre feet and fixed to the



framing with screws. Lugs are forced on the bottom body rail and seat rail, to which corresponding lug flaps are forged on the S top rail; these flaps are nicely fitted to each other and bolted together. The seat rail is forged with double rail.

The body framing is 4 inches wide by 1 inch thick, English ash, the bottomsides are 1½ inch thick by 3½ inches wide. The cross bar at bracket is got out to the angle of the line of the bracket and the front pillar, the foot-board being continued to inside of the body and level with the back edge of the cross bar, to which it is screwed; the platform foot-board is also continued to the inside of boot and screwed to a cross bar let into the top body framing piece, the edge is bevelled to the line of the foot-board and screwed to it. The sizes of body are: Depth of side, 29 inches; width on seat line, 14 inches; length of bottomside, 2 feet 6 inches; length of bracket from body, 20 inches; length of front line of body on the angle, from bottomside to bracket, 14½ inches; width of foot-board from front of body, 22 inches; from back of body framing, 26 inches; width of platform foot-board from body, 9½ inches; full width across body on bottom, 30 inches; on top of ditto, 38 inches; length of seat, 42 inches by 16 inches; full depth of seat rail, 10 inches.

The under-carriage is platform framed and fitted with groom's seat behind, it is best to fit a step to both sides of the hind scroll irons, so that the seat can easily be mounted from either side; the seat platform is both used as a seat and standing board for the groom or attendant.

The shafts ought not to be less than 2½ inches wide by 1⅝ inch thick, and made of the best lancewood, but not placed in any part but at the points, in the usual way; the length of shafts from bar are 6 feet 2 inches; length of hind part of shafts, 5 feet 6 inches; width of hind platform seat, 13 inches; width between points, 26 inches; width between shafts at cross bar, 34 inches; length of spring to centres, 49 inches; compass over all, 6 inches; number of plates, 7; width of ditto, 2 inches; depth of front scrolls to centres, 5½ inches; depth of hind ditto, 7 inches; height of wheels, 4 feet 8 inches; strength of spokes, 2 inches; depth of felloes, 2½ inches; width of tire, 1½ inch by ⅝ inch; length of hubs, 9 inches; diameter of ditto, 8¼ inches; number of spokes, 16.

Length of Collinge axle over solid collars, 45 inches; over solid flaps, 39 inches; width of ditto, 2 inches butterfly by 5 inches long; strength of axle, 1½ inch; length of boxes, 9¼ inches; height of shafts from the ground, 48 inches at tug stop. The foot-board and platform plates have the hand rails welded in. The painting is generally a yellow or vermilion ground and picked out and fine-lined black or blue.—*Coach Builders' Art Journal*.

#### ROOM AT THE TOP.

"HOWEVER crowded the professions may be, fame keeps a few reserved seats for particularly industrious or brilliant applicants for honors. There is room at the top—for a few. It is well that the names of the holders of the reserved seats are not known at once, so that the great multitude of ordinary aspirants are not prematurely discouraged. It will be impossible to satisfy everyone in this world. The best way then is to make sure that the honors of the world to come, which are best of all, are not failed of, and if they are at last bestowed, the disappointments of this life may be philosophically borne."

The same may be said of the trades, and young men just embarking should keep the fact in mind that hard and persistent effort is necessary if they hope to win success.

#### NOW SPAIN.

SPAIN is beginning to fear American products. In concluding an article regarding Spanish fruits in competition with those of California, a Spanish journal says: "We can compete with America only by employing her methods—improved cultivation, harvesting, and packing, cold storage and rapid, safe transportation. Otherwise, our exports will decline every day. Castile was once called the granary of Europe; yet we have lived to see foreign wheat, after paying heavy transportation taxes, protective duties, and an adverse premium of 35 per cent. in exchange, competing with our home grown cereals. Shall we live to see American oranges competing with ours on the Valencia market itself?"

WHEN a man is not amused, he feels a contempt for those who are.—*Bulwer*.

#### REVIEW OF THE CARRIAGE TRADE FOR THE FIRST HALF OF THE YEAR 1901.

##### ACTIVITY OF BUSINESS, LEADING STYLES AND PRONOUNCED FEATURES.

THE first six months of the year 1901 have passed and the carriage trades' accounts recorded. We may therefore review the situation and place before the readers of *THE HUB* the results as we find them. From every part of the country, East, West, North and South, we get the words, "Never better." True it is that there are a few prominent points that are suffering from the dry rot, and they who are located there have little to say of an encouraging nature; but if we inquire elsewhere, we find that buyers have made their purchases where manufacturers have kept up to the demand of the times, and whose styles meet the requirements of their patrons, of those who want the latest styles of high grade work, and it is the manufacturers in those places who have been struck with the "dry rot," not the buyers. The one drawback has been the inability on the part of manufacturers to fill orders. Cases are mentioned where the manufacturers of low priced buggies, those that have been wholesaled at \$35 each, have been offered \$10 extra per job, but could not accept the order. The condition with fine and high grade work has also suffered in like manner, and to-day buyers have been compelled to ship their old carriages to summer resorts simply because of their inability to buy what they wanted. One manufacturer, who has been in business about twenty-five years, said: "This has been the best season I ever had, best in the demand for high grade work, best in variety of styles and best in prices. Customers have bought as though it was a real pleasure and if the vehicle was what they wanted they did not question the price." And what has been true with one, has been true with all energetic houses that carried desirable stock. Another said this has been a record six months in the line of high grade vehicles. The leading custom dealers in the East and in the West are sold out of all their popular styles. Chicago repeats the story of New York. Boston gives back the same, while the city of Denver tells a like tale for Rocky Mountain trade. An authority on the Southern carriage trade says that more high grade carriages have been shipped to leading Southern cities than ever before in twice the length of time. Those who build cheap work have shared in the prosperity of the times. They, too, have sold out their product closer than ever before, and there has been no slaughtering of prices.

Such, then, is the general condition at the close of June, so far as the finished carriages are concerned; but this does not tell the whole story. The carriage builder of to-day does not follow in the footsteps of his predecessors. He no longer works from the plank, raved spoke, iron bars and dry pigments up to the finished vehicle. He buys his axles, springs, wheels (in most cases), drop forgings, sawed woods, turned spokes, bent timber, furnishings, etc., in variety too numerous to mention. He looks to some one of the hundreds of plants, given over to the manufacturer of carriage materials for his supplies, so that they who produce these must be considered when the condition of business is taken in account. Few of these, even the least progressive, have been able to fill their orders, and many indeed close the season with a large volume of orders unfilled. One in writing of his line, said: "I can't fill your order, though small, and as much as I would like your trade, I am so behind with my orders that if I did not book another in two months I could no more than fill those that should have been filled by the middle of June." Like testimony is given by manufacturers in all lines of carriage materials. Such a thing as an empty order book on July first is likely to be a curiosity. One good feature, in connection with all this activity is the fact that there has been no inflation of prices by material manufacturers or manufacturers of finished carriages. It is true the over anxious customer has paid an advance for the sake of an early delivery, "but such buyers appeared so happy when drawing their check for the larger amount that, said one dealer, I regretted somewhat that I did not ask more just for the sake of making him look upon the transaction in a more serious light."

The importations have been very light and were mainly sporting vehicles. In one instance two road coaches were sent to one factory to be overhauled and fitted up. Both were of English build, but one had been to Paris, refitted and repainted by a leading builder of that city. At the same time of the overhauling of the two imported coaches, one of American build was brought to the same factory for a little touching up to cover blemishes received in shipment. All these coaches were the standard patterns, and so far as proportions and style were concerned they were duplicates; but it can be said truthfully that the American built coach showed a higher finish and a nicer ad-



justment of details than either of the others. It may not prove any more durable, but it will surely not lose caste in that respect. While in all that goes to make it more pleasing in finish, it was far in the lead of the others, although costing but a trifle more than the others at the respective factories. We mention this, merely to emphasize the fact that the American carriage builder has no occasion to fear foreign competition, when style and workmanship are controlling factors. At the same time our leading builders recognize the genius and skill of French and English builders, and are ever on the alert to obtain information and to look into the make of the best built vehicles in those countries, and are not disposed to find fault because of the importing which is confined to the best of European products.

The carriage builders of to-day have to deal with a much more critical and quick-sighted line of customers than did they of a quarter of a century ago. Men know what they want and what has been in the market, and are quick to detect faults, while ladies bring refined taste and a keen appreciation of harmony of detail, color and form, and the two must be satisfied; whereas, in times past, "send me your latest and best" covered the dictation on the part of the buyer, and it is this changed condition that is responsible for the great variety of styles and kinds and the broad scope in colors and combinations now existing. Except in standard vehicles, such as the road coach and the one-man road wagon, few of our leading custom builders will duplicate a job. If a brougham, cabriolet, duke, spider, or similar carriage, a general form may be settled upon, but each individual vehicle will possess a distinctive characteristic, so that our drives are not crowded by a line of duplicates, no matter how good an individual carriage may be. This fact calls for high skill in designing, and artistic excellence in finish, and marks one of the most distinctive features of American fine carriage construction.

In view of the unusually favorable showing it may be well to look over the field and learn what the leaders are, if any. This is more difficult than it would have been had the demand been less active, as many undesirable vehicles found buyers, simply because of the inability on the part of dealers to find substitutes. In the great line of low and medium priced carriages there need not be, neither was there, a leader. The buyers of these were governed in their purchases by price and accommodations, a buggy, single phaeton, if for two; a surrey or two-seated phaeton for four, the style playing a secondary part. Not so, however, with better goods. In these there is a decided preference, and for general use the runabout on side bar or elliptic springs and high wheels is a pronounced leader. In low wheels wood and wire are contesting for supremacy; in tires, it is yet an open question whether solid or pneumatic tires will come to the front. The newcomer, the speedway wagon, has proved to be a popular addition to light road rigs, and is likely to grow in popularity. Bike gears are best liked for speeding, but those that are a few seconds too slow to lead are giving preference to other gears, and are copying, as far as possible, after the standard road wagon gear, without its high wheels.

The spider for ladies continues to grow in popularity, and it now looks as though it would be the leader in its line at all fashionable summer resorts during this summer. The ladies' phaeton on "spider" lines, but very low, is the highest type of ladies' carriage. Where elegance and quiet are the requisites and where teams, instead of single horses are driven, as yet few of these have been built, except by leading custom builders, but the output has been quite numerous. For gentlemen, and we may say ladies, of sporting proclivities, the high two-wheeler is one of the features of the season. There is no special design of body, but it must be on lines that contribute to increased height, and must be hung on high wheels, in some cases running to an extreme, and when one of these appears along side of the bike wagon it reminds us of the tall and short man in the play who represented themselves as "the long and the short" of the matter.

Basket work shows itself in almost every line of pleasure vehicles of the lighter type, except the wagon. The morning car, with very large willow work seats, wings and dashes, has met ready sale; so have many of the styles of pony vehicles in which the bodies and seats, and in some cases both body and seat, are willow work. These seats have also grown in favor for canopy top surries and even for runabouts.

The heavier vehicles, such as broughams, cabriolets, landaus, show less change in style than others, but the sales were never greater. This is notably the case with the first two. Landaus cannot be said to show as high a place in the fashionable world as they did. Notwithstanding sales have been numerous. The prime leader, without doubt, is the cabriolet. The styles incline toward the flattened easy sweep, short gear and low wheels. As it ranks as a winter as well as a summer carriage for park and seaside and city, its popularity

is likely to be enhanced. The brougham may have suffered a little from the popularity of the open carriage, but it is yet so popular that one cannot detect a falling off in our large cities as a pleasure, visiting or shopping vehicle. A notable increase has been shown in the number of opera buses, with coach seats, for city use and the low front seat for the seaside and summer resorts.

In addition to the styles and kinds mentioned there is an almost inexhaustible number of styles and kinds for special and family use; but the variety is too great to attempt to make mention of them. But they, however, added to the leaders mentioned, make the pleasure drives of this country notable for the variety of vehicles seen thereon and give to our carriage industry one of its leading and characteristic features.

#### VEHICLE BOARD OF TRADE MEETING.

A SPECIAL meeting of the National Vehicle Board of Trade was held on May 21 at the Hotel Cadillac, Detroit, Mich., there being about twenty members present, a number of whom came from states outside of Michigan. The board was organized in Indianapolis about three months ago, and this was for the purpose of enlisting the aid of the Detroit manufacturers, who were unable to attend the meeting at that time. Another special meeting will be held in July to complete the work.

The purpose of the Board of Trade is to look after and legislate for certain questions that the National Association of Carriage Makers cannot handle. Its membership is composed of carriage makers in the Middle and Western States. Self protection is one of the principal planks in its platform, and one of the members stated that before long a trade bureau would no doubt be established. To this bureau the members will report all customers who have goods shipped to them and then countermand their orders, or who are slow pay or in any other way undesirable. If they are reported three times every member of the organization will be notified of the unreliability of the person, and the vehicle men will then govern themselves accordingly.

Another question the new Board of Trade will take up is freight rates. The carriage-makers are shipping goods in many cases under the same freight rates that were made thirty years ago. Other manufacturing interests have been able to secure a reduction in the tariff through special efforts, and the vehicle-makers will now try to get some regulations for themselves.

The board also hopes to regulate the matter of exhibits. It has been the custom for manufacturers to ship their goods to almost any town where an exhibit is being held at a great cost to themselves, and during those times the competition is keen. The manufacturers, ever anxious for business, cut under one another and sell goods at prices far below what their traveling men would dare to do. This phase of the carriage business has become so objectionable that the manufacturers are now going to try to do away with all exhibits, except where a convention is being held.

One of the directors said there was no further action taken regarding exhibits other than an informal expression from those present. They were a unit against the growing expense of these shows. What the result will be as regards exhibits at fairs I am unable to say, but the tendency seems to be toward bringing these shows down to the fewest number possible. Secretary McIntyre reports that the membership of the association is growing rapidly.

#### ASKING FOR A CHANGE OF DATE.

TRAVELING men who cover the territory embraced by the Western Retail Implement and Vehicle Dealers' Association are obtaining signers to a petition calling for change of date for holding the annual convention of the association to the first week in December. The petition states that "owing to the fact that during the past three years we have been put to no little inconvenience in getting implements and vehicles shipped to us in the spring in time to supply our customers, which condition has not only inconvenienced us, but has caused a loss in trade, and as the jobbers and manufacturers claim that this trouble would be largely obviated if our orders were placed earlier in the season, we respectfully petition your honorable body to set the date of the next annual convention of the Western Retail Implement and Vehicle Dealers' Association for the first week in December."

The feeling is general that the signature of a majority of the members will be obtained and that the board of directors will accede to the wishes of the petitioners.



## THE CARRIAGE TRADE IN JAVA.

SPEAKING commercially, as well as in a general sense, there are probably few countries that are less known to the public than Holland's possessions in the Orient, the Dutch East Indies. People all over the world, of course, are more or less familiar with the fragrant coffee that bears the name of the isle of Java; and doubtless many are aware of the fact that much of the sugar that sweetens our cup of coffee is extracted from the cane that grows up out



A TYPICAL STREET SCENE OF THE EAST.

of the rich soil of Java and Sumatra; but further than this the world possesses only a crude and vague idea of the group of islands, under Dutch sway, lying a short distance to the south of the great Continent of Asia, and within almost hailing distance of Uncle Sam's new dependency.

Indeed, so little do our geographies tell us of Java, Sumatra and all the other bits of land that go to make up Dutch India, that were it not for the coffee, sugar and rice, which feed humanity in both hemispheres, the Indies could be obliterated from the maps without being greatly missed. Nevertheless, the little continent of Java alone, only 666 miles long and from 56 to 135 miles wide, with an area about the same as that of the State of New York, supports a population of twenty four million souls, a number greater than that of all the other islands of the Indian Ocean combined. The Governor General is paid a salary twice that of President McKinley's, and the standing army is as great as was that of the United States previous to our war with Spain.

The principal cities of the Indies, Batavia, Soerabaja and Samarang, situated on the coast line, with their massive docks and teeming commercial activity, resemble more than anything else the great ports of Europe. The trade that passes through these ports alone amounts to many millions of guilders. Of the exports rice easily heads the list with 109,000,000 pounds; tea, 11,000,000 pounds; of coffee, the exports amount to \$10,000,000; of tobacco, to \$16,000,000; while more than \$2,000,000 worth of tin is shipped from the famous island of Billeton to European mills; and two-thirds of the world's battles against malaria are fought with the quinine that comes from Javanese woods.

Quite aside from its importance as a supplier of raw products, the East Indies hold a high position in commerce as a consumer of manufactured products. Of Europe's surplus manufactured wares, 162,561,364 guilders' worth (\$65,024,545), now find a market every year in Java and Sumatra, a sum almost as large as that of the total exports of the islands, which in 1899 approached 240,000,000 guilders (\$96,000,000). The long list of imports include machinery and tools amounting to \$2,500,000; provisions, \$3,000,000; cotton manufactures valued at \$17,600,000; flour, \$4,840,000; fertilizers, \$1,600,000; and last, carriages to the amount of one million guilders (\$400,000).

For the last item Dutch India is without doubt, in proportion to its size, the most important market in the East. As in all tropical countries, particularly where the percentage of the wealthy class is large, so in Java riding and driving not only constitute a widely popular pastime, but they are almost necessities, especially to Europeans, who, being ill accustomed to the intense heat of the

tropics, are unable to take outdoor exercise in any other way. Hence every person able to afford it keeps some kind of a conveyance, and the number of carriages owned in the various large cities runs up well into the thousands.

On the other hand, the local production of carriages is comparatively small. It is confined almost exclusively to a few places, such as Soerabaja in Java, and Medan-Deli in Sumatra, and has by no means attained a state of development commensurate with the manifold requirements of the demand. The result is foreign countries are called upon to furnish the supply, and consequently an extensive trade has sprung up between the islands and Japan, China, and the European countries. This trade in 1899, the latest period for which officially statistics have been issued, amounted to no less than \$404,234.80, as compared with \$382,833.20, in the preceding year, or a growth of \$21,401.60.

The Dutch East Indies' statistics are not sufficiently detailed to indicate the exact sources of the supply, since all goods shipped to Java in other than Dutch bottoms have to be transhipped at Singapore, Penang or Hongkong in Dutch coasting vessels; consequently the bulk of the imports appear as coming from these three ports, when, in reality, they are gathered from almost every point of the globe. This complication is the outcome of an old Dutch law requiring the utilization of Dutch shipping for colonial trade. It is safe to assume, however, that the bulk of the carriages purchased abroad by Java are furnished by Belgium, Germany, Austria, Great Britain and France—the nations most deeply concerned in Javanese markets. China appears in the statistics with vehicles valued at \$8,632.80, and Holland with \$378.80; China's exports being explained by the large Chinese colony composed, for the most part, of immigrants imported for working the coffee, sugar and rice plantations. Many of the older members of this colony have already by patient and persistent efforts attained great wealth. They dwell in palaces as royally as princes, and many of the most expensive turnouts in really cosmopolitan Java are owned by these yellow-skinned representatives of the country of the Dragon. Altogether, there are about 251,325 Chinese in Netherlands India, and they are probably the most democratic set of heathen found anywhere on the globe. The better classes follow closely the London fashions, wearing spotless duck coats and trousers, patent leather shoes and derby hats; while the pigtail is made to shrink to a mere stump. They may be seen in the streets of Batavia, Soerabaja or Samarang seated complacently in handsome victorias drawn by imported horses, with liveried Javanese coachmen on the box. Stylishly equipped Celestial equestrians may also be seen during fashionable hours of the day in all parts of the picturesque city parks, each attended by an obsequious groom, and looking as civil-



JAVANESE CART DRAWN BY ZEBUS.

ized and up-to-date as the proudest Hindu resident of London.

Almost all grades and kinds of carriages imaginable are found in Java. Victorias, two-seated beach wagons, ordinary top buggies, dog carts and phaetons are constantly in demand among Europeans and the moneyed natives; while jinrikishas and the countless types of Eastern conveyances find a ready market among the lower native and foreign element. The common vehicle for hire in Java is the "sadoe" (dos-a-dos), a two-wheeled gig drawn by a tiny Timor or Sandalwood pony, with sometimes a second pony attached out-



side the shafts. A broad cushioned seat over the axle accommodates four persons, sitting, two front and two behind, with their backs together. The driver sits fairly comfortably, facing to the front, but those behind must hold fast to the canopy frame while being jerked about town, in the footman's place, at one gulden, or about forty cents an hour. For country riding low four-wheel carriages, built somewhat on the lines of a phaeton, are much in use. They are canopied and are drawn by four small ponies. The driver holds the reins, and that is about all he does. The actual driving is done by a lithe little footman, who clings to a rear step, and every now and then takes to his heels to crack the whip over the ponies and urge them onward with a frenzied "Gree." He runs



THE ANCIENT WAY OF TRANSPORTING MERCHANDISE IN JAVA.

beside the tiny steeds, and steers them by the traces, over bridges, around corners, past other vehicles and through crowds, while the driver holds the ends of the reins and unconcernedly chews away on his quid of rank Sumatra tobacco.

These small Timor ponies are in universal use throughout the Indies. The expense of freight and handling is so great a consideration in the purchase of horses that only the wealthier classes can afford the luxury of a foreign bred carriage or saddle horse. In consequence, to the native bred pony falls the lot of hauling the great mass of Java's population. The native Emperor's troops are mounted on these fiery little Timors, and the same little animals, driven tour-in-hand, to magnificent coaches, are used often in preference to statelier steeds by the haughty Dutch Governors of the country. In farm work the pony divides the labor with the so-called water-buffalo, a smooth, gray, easy-going beast, entirely lacking in that intelligent cast of countenance belonging to the American ox. Whether hitched to the plough or the cart, he moves along patiently, driven usually by a nude little boy. The cart he hauls is probably the most primitive of its kind to be found anywhere in the East.

Fashioned crudely, and springless, even the split pins are of wood. Notwithstanding their ungainly appearance, however, they are strong and durable, as shown by the huge loads of cane they bear from the plantations to the sugar mills.

A word should not be omitted, in passing, in reference to Javanese roads. The traveller, even though fresh from the smooth highways of Europe, would have to look far to find a better system of road construction than obtains in Java and Sumatra. The main roads resemble avenues more than anything else, arched as they are with beautiful shade trees and hedged and fenced like some aristocratic suburb of a great capital, an endless park, or continuous estate. In fact, one can, at times, travel for thirty or forty miles without finding a neglected acre. Streams, ravines and ditches are solidly bridged, each with its white cement parapet and smooth concrete flooring, and each numbered and marked with Dutch preciseness. A peculiar feature of Dutch Indian roadways is the name of the estate charged to maintain the highway in good condition, posted in a conspicuous place where it cannot be overlooked, should the proprietor prove delinquent in this respect.

Along some of the highways are open, red-tiled pavilions, built over the road as refuges for man and beast from the scorching sun of one season and showers of the rainy half of the year. These roads are often crowded like city streets; people trooping along,

bowed down under the weight of loads of fruit; slowly moving water oxen, sauntering peacefully; and ponies galloping headlong through the crowds, causing the latter to scamper to all sides in excitement. This excellence of the country roads doubtless explains much of the swift pace which the little Timors like to set under the broiling sun and through pouring rain.

Harness is also an important feature of Java's import trade. When not made of rope, as is the harness used for plantation work, this article is imported largely from Great Britain and France. The exact extent of the harness imports is difficult to estimate, for the reason that these goods are classed as leather manufactures. That the trade is considerable, however, is to be assumed from the circumstance that very little is manufactured locally. All the expensive trappings purchased by the wealthy classes, as well as the lower grades used by the cabs and planters, are of European manufacture. British harness, etc., in particular, find a ready market throughout Dutch India, while the bulk of the whips, for riding and driving, are imported from Great Britain. In this line, too, American manufacturers should be able, by proper efforts, largely to extend their trade in Java and Sumatra.

The saddlery used in Java by the foreign residents is another article of European design and manufacture, the domestic saddle, used by the natives, being of so curious a pattern that no European, except perhaps a Cossack or an American Indian, would have the courage to test it. The peculiar feature of the native saddle is the stirrup. This consists of a single upright bar of iron, which the rider holds between the great toe and its neighbor. All of the native Emperor's mounted troops ride their little Timors with this arrangement, and they seem to derive as much support from this firm toe-grip as booted riders do from resting the whole ball of the foot on our stirrups.

As already stated, the principal markets both for carriages and harness in the Dutch East Indies are the cities of Batavia, Soerabaja, Samarang, and Solo. Batavia and Soerabaja are the two largest cities in the group, and consequently merit the closest attention on the part of American manufacturers desirous of extending their trade in the Orient. In all of these four cities, however, there are many large concerns, mostly in charge of Dutchmen, with which American carriage manufacturers should be able to do business. Both the carriages and the carts made in this country are especially adapted to the local conditions throughout India, being light where the European vehicle is usually heavy. The smallness of the general run of horses makes this quality essential for country use, while for city driving American carriages can certainly compete with the product of any other country in the world. Hence it is to be hoped that more careful attention will in future be paid to these wealthy and prosperous islands by United States exporters than has heretofore been the case.

#### THE PHILADELPHIA SPEEDWAY.

AFTER long and due consideration the horsemen of Philadelphia have settled the details relating to a speedway in the Quaker City. The plans call for a driveway in Fairmount Park, extending from Belmont Mansion to Chamounix Highlands. A resolution also has been passed asking for an appropriation of \$210,000 for the construction of the drive. Philadelphia has many light harness horse enthusiasts and many fast steppers may be expected to have a speedway to be proud of. The plans provide for a course of one mile long, to be eighty feet wide, with a return drive fifty feet wide. Between is to be a space forty feet wide, twelve feet of which will be for the use of spectators. New York and Boston horsemen were consulted while preparing the plans. The return drive idea, it is believed by horsemen, hardly can fail to be an advantage, permitting as it does speeding in one direction without any confusion.—*Spirit of the Times*.

#### SALE OF THE T. T. HAYDOCK CARRIAGE CO.'S PLANT.

THE sale of the T. T. Haydock Carriage Co.'s plant at Cincinnati, which had been advertised, took place as per notice. The property had been held by the trustees for the benefit of the creditors. During the time of settlement the most of these claims had been purchased by the Haydock Company and the sale was but a legal formality. The property is very large, 190x190, with large buildings, but it is adapted to the requirements of the Haydock Company and would be difficult to operate or use for any other kind of business. The result was that not more than half a dozen people were present at the sale and there were no competing bidders.



## ARKANSAS TIMBER.

FORT SMITH, Ark., June 8, 1901.

Editor of THE HUB:

Dear Sir—I am in receipt of yours of the 6th inst. in reference to the timber interests of Arkansas. In reply permit me to say that the timber interests of Arkansas are very extensive, and are rapidly attracting the attention of the trade. In Western Arkansas is to be found the white oak, hickory, ash, walnut, pine (yellow), cotton wood, maple, red oak and cedar. As yet few industries have been established to manufacture these woods into finished or sawed shapes. In Fayetteville, sixty miles north of here, are two establishments manufacturing wagon and buggy shapes of the various woods in that section. Our furniture factories are supplied exclusively with wood from our State. In Southern Arkansas are thousands upon thousands of acres of virgin forests yet untouched by the woodman's axe. Many stave factories are now getting their supplies from the southern section of Arkansas. In Eastern Arkansas like conditions exist, while in Middle Arkansas, where no railroads have penetrated, wonderful growths of fine oak and ash forests exist. Arkansas has a wonderful future before her, not in the great variety of wood only, but her coal and other minerals. We are little understood, and if the people who are on the lookout for investments will lay aside the erroneous ideas that they have cherished against Arkansas, they will find here a wonderful field for investments. Arkansas invites the people of our great nation to investigate our wonderful State, and I am sure if investigated from a purely business standpoint, they will be surprised at the prospects of our future. The laws of our State are favorable to new capital; no animosity exists against Northern people; we are a broad-gauged, liberal people down here, and have much to offer you in the way of investments that will bring you good returns. All we need is capital to develop these resources, and that is now coming this way, and ere long Arkansas will be one of the richest and most desirable States in the Union. The more you investigate our timber interests, the more you will be convinced that we are in a position to take care of the trade for many years to come. The fact that not many concerns are engaged in the manufacture of bent wood for buggies and wagons as there should be, is because our people are engaged in other vocations, and are awaiting the introduction of new capital and experienced men to help the good cause along. Say to the people of the buggy world, that Arkansas presents a good field for the investment of capital in the manufacture of bent wood and other kinds used in the manufacture of buggies and wagons, as we have the timber and railroad facilities to ship to all parts of the country.

Very truly, GEO. SENDEL.

## FOURTH ANNUAL DINNER OF THE TECHNICAL SCHOOL.

THE fourth annual dinner given by the Board of Trustees of the Technical School of the C. B. N. A. was given at the Brevoort House, New York City, on June 3, 1901. About forty pupils and graduates, together with members of the Board of Trustees and friends, gathered around the well-spread table and partook of the following:

## MENU.

Little Neck Clams, Mignonnette Sauce.  
 Cream of Chicken à la Reine.  
 Olives, Radishes, Toast de Caviar décoré.  
 Filet of Sole au Vin Blanc.  
 Bermuda Potatoes Persillade.  
 Tenderloin of Beef, Bourgeoise.  
 Fresh Asparagus, Tessinoise.  
 Punch, "Yankee Flag."  
 Roast Squab au Cresson.  
 Lettuce and Celery Mayonnaise.  
 Technical School Glacée.  
 Assorted Cakes. Strawberries, Chantilly.  
 Demi-Tasse.

About one hour and a half was spent in eating and social conversation. At 9:30 Franklin Murphy, president of the Board of Trustees, called the assemblage to order, and in behalf of the Carriage Builders' National Association extended a welcome to the students and friends. He complimented the class for the work done, and spoke in high praise of the zeal and ability of Instructor Andrew F. Johnson, closing by presenting to Sylvester M. Bronson, of Lockport, N. Y., a certificate of graduation. He also spoke in complimentary terms of the Young Men's Institute, with which the C. B. N. A. class is associated, and called upon Mr. Kassing, chairman of In-

stitute classes, who spoke for the Institute, paying a high tribute to the carriage class, and pledging the best efforts of the Institute to aid the class in every way possible. Mr. Baldwin next spoke of the work of the Institute, with which he is also connected, and seconded Mr. Kassing's promise to aid the carriage class in every way in his power.

Mr. Murphy again spoke of the school work, and referred to the exhibit of the school at the Pan-American Exposition, and urged all who visited that great Exposition to be sure to see the exhibit placed there by Mr. Johnson, the instructor. Short speeches were made by Albert Hooker, one of the Board of Trustees, Walter D. Gregory, of THE HUB, and Mr. Redding, of *Harness*. The members of the school board present were: Hon. Franklyn Murphy, William W. Ogden, Albert Hooker, and Mr. E. M. Hotchkiss, secretary and treasurer, together with Andrew F. Johnson, instructor.

The event passed pleasantly, and all agreed that these annual gatherings of the class served to unite the old and the new members and the instructors and school officers into a close relationship, and an event that will be remembered with pleasure for years to come.

## NATIONAL VEHICLE BOARD OF TRADE.

THE National Vehicle Board of Trade, headquarters at Indianapolis, is a chartered association having over one hundred members, who are carriage manufacturers. On its organization, correspondence was opened with the various vehicle dealers' associations, among them the Carriage and Harness Dealers' Protective Association, of which Mr. V. T. Van Fleet of Somerville, N. J., is president. An answer to the Board of Trade was made by President Van Fleet, to which Mr. D. M. Parry, president of the N. V. B. T. shows the position of this one dealers' association. It is as follows:

INDIANAPOLIS, May 7, 1901.

President V. T. Van Fleet, Somerville, N. J.

MY DEAR SIR—Your rather lengthy communication of the 2d inst. just received. I am pleased to learn you have given such careful study to the matter presented, and I thank you for the full and candid expression of your views.

It is gratifying to hear you say that of the five clauses setting forth the objects of the National Vehicle Board of Trade, Clauses 1, 2 and 3 are most commendable and will be applauded by every legitimate carriage dealer in the country.

Clause 4, "To endeavor to obtain fair and just classification of finished vehicles and rates of freight thereon," you find objectionable, because a committee of members of the C. B. N. A. is working to secure such result. Any assistance or action upon the part of the N. B. Board of Trade in this direction, you say, is unnecessary and would create division of effort, from which no good could result.

It is strange how you reach such conclusion. You will readily admit that it is a matter of concern to all vehicle and implement dealers, as well as to all manufacturers of such goods. Therefore, if all the various vehicle and implement dealers' associations, acting as a unit, press their claims for just recognition, will not such action carry greater weight, power and influence, than a single committee of the C. B. N. A.?

Already it is a division of effort when only a part of the great multitude interested is working for results. The whole is greater than the part and, in the combination of forces, just demands are more quickly considered and granted.

Really! do you think that all others must fold their hands while the C. B. N. A. committee alone and independently handles this question?

I hope I do you no injustice when I say that your letter breathes a tone and spirit, all the way through, suggesting that all these organizations of manufacturers and dealers must keep wide apart and act dividedly and independently, even regarding matters of mutual interest. The opposite view, that of concerted action touching common interests, is the desire of the N. V. Board of Trade, and I regret you are not in sympathy with such views.

Clause 5 you say you do not clearly understand, but without hesitation you proceed at once to draw the unwarranted conclusion that the new organization arrogates to itself the regulation of all matters and will provoke to hostility other associations. What motive or ideas lead you to this violent conclusion you fail to mention.

After all, you somewhat reluctantly admit your objection to the avowed purposes of the N. B. Board of Trade are doubtful and merely speculative, but your real, for sure objection, is against what you term the "secret purpose" of the organization, or such purpose as rumor ascribes to it.

A charitable view would be to give the organization credit for what it purports to be until it has proven itself otherwise. It seems to please you better, however, to indulge in presumptions that it will be other than it purports to be. When a fellow has an objection he has to get it in. If there is no opportunity then he makes one.

Now this "open secret" you declare to be an avowed purpose to control carriage expositions. Undoubtedly you may rightly surmise the new association will be interested in vehicle shows. And, so far as its interests go, it should have the privilege to give its views.

So should any other organization interested be heard, and out of



## Pan-American Notes.

### EXHIBITS OF THE CARRIAGE BUILDERS' TECHNICAL SCHOOL AT THE PAN-AMERICAN EXHIBITION.

IN our June issue we referred to the exhibit made by the Carriage Builders' Technical Class at the Pan-American Exhibition. Since then Instructor Johnson has kindly furnished us with the following list of exhibits, 124 in all:

- Eleven free-hand drawings.
  - Twenty-four geometrical problems.
  - Sixteen problems in projection.
  - Eight problems in developments.
  - Fifteen problems in shadows.
  - Twenty-seven working drawings of parts, drawn to full size.
  - Four working drawings of bodies, to scale.
  - Three working drawings of gears, to scale.
  - Five working drawings of the completed vehicles, to scale.
  - Seven problems in perspective.
  - Three drawings of carriages in perspective.
  - One scale drawing, showing the side view of completed vehicle.
- The exhibit is in the Educational Department, in the Liberal Arts Building, in charge of Dr. Selim H. Peabody.

### SPECIAL DAYS.

THE following special days at the Pan-American Exposition have been definitely fixed:

- July 2.—Wellesley College Day.
- July 5.—Liederkrantz Day.
- July 10.—Maryland Day.
- July 11.—Commercial Travelers' Day.
- July 16.—Chautauqua Day.
- July 18.—Ohio Day.
- July 23.—C. M. B. A. Day.
- July 24.—Knights of Columbus Day. Utah Day.
- July 25.—Scandinavian Day. Porto Rico Day.
- Aug. 1.—Mystic Shriners' Day.
- Aug. 10.—Missouri Day.
- Aug. 14.—Virginia Day.
- Aug. 15.—Red Men's Day.
- Aug. 21.—Louisiana Day.
- Aug. 21.—Electrical Day.
- Aug. 26.—Municipal Day.
- Sept. 3.—District of Columbia Day.
- Sept. 6.—National Association of Stationary Engineers.
- Sept. 9.—Spanish-American War Veterans' Day.
- Sept. 10.—Rhode Island Day.
- Sept. 12.—Polish Day.
- Sept. 16.—Mexican Day.
- Sept. 17.—G. A. R. Day.
- Sept. 19.—Welsh Day.
- Sept. 20.—St. Catharine's Day.
- Sept. 25.—Oregon Day.
- Oct. 8.—Brooklyn Day.
- Oct. 9.—New York Federation of Women's Clubs.
- Oct. 10.—National Grange Day.

### PORTS OF THE ARGENTINE REPUBLIC.

THE increase in the productive power of the Argentine Republic has caused the steady development of the various outlets to the countries beyond the sea.

The city of Buenos Ayres, the capital of the republic, has been for many years the point to which gravitated all that was of value from the interior provinces; but with the growth of production, it has been found best to forward the goods to the nearest port.

The city of Rosario receives yearly an immense amount of grain from the interior. An enlargement of the present port is demanded. Higher up the Parana River is the port of Colastine; but as it is subject to inundations, its usefulness will probably be confined to the shipment of hard-wood lumber, sleepers, and quebracho stock for the manufacture of tanning fluid.

San Nicholas, situated on the boundary of the two provinces of Buenos Ayres and Santa Fe, is a port which has never done a great

this exchange of opinions, discussion and conferences, should be found a solution for the highest welfare of all.

Now, have you ever tried to guess if there might be a mote in your own eye?

You assert that your own association is now in control of vehicle expositions, and it will under no circumstances surrender control or dictation in this matter.

This purpose, to control carriage expositions, which you attribute to the N. V. Board of Trade and thereupon proceed to condemn, you arrogate to your own association as a matter of right, denying even the right of suggestion or representation to other parties in interest.

If you have voiced the sentiments of your association correctly I cannot well understand how you justify your position and condemn that of the N. V. Board of Trade.

The latter invites to a conference. Yours declines absolutely to confer. One asks an exchange of ideas. The other takes away the right to be heard. One is willing to listen and arrive at the greatest good for the greatest number. The other, regardless of rights or privileges belonging to the whole class, arbitrarily decides and dictates.

One says, let us get together and from a consensus of opinion determine what shows will best subserve the welfare of both manufacturer and dealer. The other says, we control and dictate and will not be molested.

This sort of government which you advocate has never been a popular one in this country.

And, by the way, did you ever hear it said that the officers of your association, instead of actually appointing and arranging these vehicle shows themselves for the best interests of the membership, had in fact given the management and direction of same into the hands of parties who are neither dealers nor manufacturers?

Is it the voice of the members that appoints the time and place, or the members themselves that bear the expense or participate in the gain or prescribe the rules and regulations? While a few are dictating are their ears deaf to what the many may be saying?

I do not say these things in any spirit of harshness, or criticism, but only to awaken you, if I can, to the fact that all whose burden it is ought to have representation. I trust that more generous motives will move you, and those associated with you, to come into fellowship and upon terms with others who have like privileges and rights to be represented and preserved.

As it is, you stand alone, the only objector. Out of about fifty letters received from the officers of the various associations, all are in hearty sympathy with the avowed purposes of the National Vehicle Board of Trade, and ready and willing to co-operate for mutual welfare.

When so many differ from you may I not ask further reflection? Very truly yours, D. M. PARRY.

### FOREST PRESERVATION.

IN an article in the *Saturday Evening Post* of March 9, under the head of "Business Combinations for Farmers," by ex-Secretary J. Sterling Morton, is the following wise and sensible paragraph concerning the preservation of our forests:

"The whole future of agriculture is vitally dependent upon arboriculture and forestry. The reckless destruction of the groves and forests of the United States threatens utter infertility to all parts of the union. More than twenty-five thousand acres of trees are cut down in the United States, and made into railroad ties, lumber, furniture, and other commodities every twenty-four hours! Among seventy-five millions of people, even this vast destruction of trees gives a very small per capita portion of wood or lumber.

"The interdependence of tree life, vegetable life and animal life is constant. Unless forests are conserved and trees planted, all farming must perish within the next hundred years; and should the whole globe be denuded of forests and groves, all animal life would become extinct. The intermission of tree life and growth throughout the world, for a single summer, would extinguish all animal life. Teaching tree planting at home, about the fireside, and practising tree planting on all the farms in the United States, are pressing necessities. Self preservation should inspire every American to do all in his power to promote arboriculture. Agriculture everywhere must lend a helping hand to the tree planters. It is time to plant trees and begin the partial renewal of the forests of the continent, if we care to leave to our posterity a habitable country."

### PERU DEMANDS VEHICLE SPRINGS.

As a result of a decree concerning the registration of vehicles, recently issued by the civil authorities in Lima, Peru, Peruvian men of commerce are striving to buy springs for wagons in this country. A copy of the decree was recently received at the Philadelphia museums. It sets forth that in the future no vehicles will be registered unless the springs are attached to them. The decree states that during the first six months in 1902 the tax of 25 per cent. imposed on vehicles without springs will be increased to 50 per cent., during the next six months the tax will be increased to 75 per cent.



deal of shipping except in connection with the river traffic. The various railways which connect it with Buenos Ayres facilitate shipments to this more important market. Buenos Ayres has an excellent system of docks, but a serious drawback is the want of water in the channels which connect them with the ocean. The channels must be constantly dredged, or the entrance to the docks would not be practicable except for steamers of comparatively light draft. The largest steamers which visit the River Plata are debarred from making use of the port of Buenos Ayres, except in certain conditions of the river. These call at La Plata (formerly called Ensenada), which is connected with Buenos Ayres by rail. Here again constant dredging must be done; but when cattle shipments are resumed, this port will be largely made use of, on account of its proximity to the establishments whence the cattle are sent. The next port southward is Bahia Blanca, which, as it is the terminus of the Great Southern Railway, bids fair to develop in future. D. MAYER, Consul.

Buenos Ayres, April 12, 1901.

#### TARIFF CHANGES IN VENEZUELA.

CONSUL GOLDSCHMIDT of La Guayra, May 1, 1901, sends translations of recent executive decrees, as follows:

##### ADDITIONAL IMPORT DUTIES.

Article 1. Beginning with May 1 next, there shall be charged in all custom houses a transit duty of 25 per cent. of the taxes which each importer pays.\*

Art. 2. Out of the proceeds of this 25 per cent., there shall be paid 20 per cent. to the states of the union as revenue assigned by the constitution and 5 per cent. to public works.

##### REDUCTION OF EXPORT DUTIES.

Whereas coffee is cheapened in foreign markets by abundant crops of other countries, causing depression among our agricultural interests, and whereas it is desired to develop the cultivation of cacao, the exports of cattle, and the planting of cotton, it is decreed:

Article 1. Beginning the 1st of May next the territorial duties, which by decree of October 3, 1900, were placed on coffee, cacao, cattle, and cotton, are abolished.

#### NEW NICARAGUAN LOAN.

CONSUL DONALDSON of Managua, informs the department that the Nicaraguan government has floated the voluntary loan of 1,000,000 pesos (\$451,000)† authorized by executive decree of February 4 last. The purpose of this loan, says the consul, is to raise funds for the construction of the new Central Railway. The bonds, which were taken up by local merchants and business men, are guaranteed by 40 per cent. of the customs duties collected at ports on the Atlantic coast and 10 per cent. of those at ports on the Pacific coast.

Vice Consul Scott of San Juan del Norte also reports the loan; he notes that 60 per cent. thereof is to be in legal currency and 40 per cent. in consolidated customs bonds.

#### INCREASED TARIFF IN COSTA RICA.

MINISTER MERRY writes from San José, May 4, 1901: "The Government of Costa Rica has issued a decree increasing the duties on all importations into the Republic after April 28, 1901, 50 per cent. The announcement is accompanied with the suggestion that, as an offset to this additional duty, it will be the policy of the government to reduce the export tax on coffee. The importation of foreign products during the last half of the year of 1900 has been comparatively heavy, and while the revenue may not at first be greatly increased by the decree, it will induce an economy among the people which should be an advantage to the country. Costa Rica needs, above all things, a diversity of production which will decrease her dependence upon any leading article. While this necessity is generally recognized, little progress has thus far been made in this direction, although the abundant natural resources of the country admit of many other valuable products, among them cacao, india rubber, textile fibers, tropical fruits, etc. The banana industry is being rapidly developed and also the planting of india rubber trees, the latter, however, requiring six to eight years before profitable results can be expected."

\* Note by Consul.—These duties were formerly 12½ per cent.

† Taking the valuation of the Central American peso by the United States treasury, April 1, 1901, at 45.1 cents.

#### PECULIARITIES OF THE GERMAN TARIFF.

CONSUL GENERAL FRANK MASON, writing from Berlin, under date of March 25, 1901, reviews new classifications under the German tariff, none of which, however, apply to goods manufactured by THE HUB clientage, and says in conclusion: "The German tariff is peculiar in this respect, viz, that all fine ornamentation and decoration is liable to advance the grade and thereby increase the rate of tariff. Upholstering, however plain or limited in quantity, greatly increases the duty on a vehicle. An instance is related wherein the import duty on an office safe from a Boston maker was doubled by the fact that the door was decorated with a small decalcomanic marine picture, which raised the whole thing to the grade of decorated steel manufactures.

"The principle is general that the goods intended for export to Germany should bear no unnecessary outward decoration and that the handles of forks, shovels, and mechanics' tools should be merely varnished or covered with transparent oil finish."

#### GERMAN ENTERPRISE IN CENTRAL AMERICA.

THE department has received the following translation from the Berlin South American Outlook, forwarded by Vice Consul General Murphy of Frankfurt, under date of April 6, 1901:

German trade continues to develop rapidly in Central America. Fully \$60,000,000 of German capital is invested in Central American enterprises, and German plantations occupy an area of 740,000 acres. Large German business houses in Nicaragua, Guatemala and Costa Rica control, in addition to the entire traffic between Germany and Central America, almost the entire foreign trade of the five republics with England and California. The shipping trade along the Central American coasts is to a large extent in German hands.

#### RUBBER AND GUTTA-PERCHA.

A LECTURE on rubber and gutta-percha was recently delivered before graduates of the Amsterdam Trade School by Mr. H. A. Berkhout, formerly forester in the Dutch East Indies and now teacher in the agricultural school at Wageningen, Netherlands; from this address I paraphrase the following, data remaining intact:

"The quality of elasticity and of returning after stretching to its original form distinguishes rubber from gutta-percha, whose form is susceptible to easy permanent change. Both are impervious to water and are bad conductors of electricity. Mixed with carbon and vulcanized by the addition of sulphur, gutta-percha is largely used in the making of telegraph cables as an insulator in which the cables are imbedded. Gutta-percha is the product of one plant, while rubber is derived from over sixty plants. Three-fourths of the gutta-percha commercial product comes from Sumatra and Borneo, although, like tin, it is shipped from Singapore and not from Batavia.

"The total world production of rubber may be estimated at 45,000,000 kilograms (99,207,000 pounds), of which nearly two-thirds comes from the Amazon Valley, one-third from Central Africa, and one-twentieth from Asia. The exportation from the Indian archipelago is of slight influence upon the trade of the world. Most of the rubber produced is imported at North American ports. Liverpool imports more than all other European ports combined.

"Rubber imports at Amsterdam ranged yearly from 1890 to 1898 from 9 to 34½ tons. Last year, although prices were good for all sorts, the arrivals from the Dutch colonies amounted to only about 17 tons. The importation at Rotterdam has fallen markedly, while at Antwerp it has risen: the fall at Rotterdam from 1890 to 1893 was from 519 tons to 242 tons, while the Antwerp imports rose from 5 tons to 2,014 tons, caused by improved conditions in the Kongo Free State. Rotterdam imports from the east and west coast of Africa fell from 363½ tons in 1894 to 259 tons in 1898.

"The cultivation of gutta-percha is not advisable on a large scale, as the tree is grown with difficulty and the native cuts it down to get the product. Gutta-percha is now extracted from the leaves of the tree as well as from incisions in the trunk. The total production in the world is about one-twentieth that of rubber.

"FRANK D. HILL, Consul.

"Amsterdam, March 28, 1901."

#### PORT CHARGES IN COLOMBIA.

MINISTER HART cables from Bogotá, April 30, 1901, that from the 15th of May, port charges will be payable in gold.



## Automobile Department.

### THE AUTOMOBILE CLUB OF GREAT BRITAIN AND IRELAND EXHIBITION.

HUB SPECIAL CORRESPONDENT.

THE exhibition of automobiles held at the Agricultural Hall, London, from the 4th to the 11th of May, under the auspices of the Automobile Club, was the most successful in every way of the many exhibitions which have been held in England. Great credit is due to the Automobile Club for the work which they have undertaken—to advance generally the automobile movement. Looking back over the four years during which the club has been in existence the members may congratulate themselves that they have not worked in vain, for it would not have been possible for the movement to have attained its present position in Great Britain and Ireland without the direction and support which the club has been able to give to it.

The uncertainties of the British climate were exemplified during the week of the show and the great attendances were proofs of the desirability of holding such exhibitions under cover, although it might be that the open air and the surroundings at Richmond formed a more artistic setting to the scene. There were no adventitious aids to attract attendance this year. These things are no longer required, for the public does not need convincing of the possibilities of the automobile; the question is not, Is it safe or practicable? but, Can I get one for myself? For here, where people follow whatever is the fashion the mere fact that His Majesty the King has several petrol and steam-driven cars, and that Her Majesty has an electrically driven automobile, is sufficient for the general public to feel that the question of advisability as to their usefulness has been settled beyond controversy. The King and the Queen have now specimens of English, French and American manufacture in use, illustrating the three different powers employed in driving the motors, petrol, steam and electricity.

It would be impossible to describe individually the more than two hundred automobiles which were assembled in the hall, however much many of them deserve to be so treated. They were arranged for the public eye into three groups, the petrol, the steam and the electric cars, and the interest with which the performances of each class in the arena was followed showed clearly how very much the public taste has advanced and how they were able to readily apprise and appreciate the different systems. The small petrol cycle on two, three or four wheels, has fallen entirely into the background. Not because of any inefficiency, but simply for the reason that the public find that they can for the expenditure of a small additional sum, obtain an automobile in which they can travel further in greater comfort and safety.

The chief features of the show were the new designs in petrol cars, the twin cylinder, gear driven, four-seated Tonneau of 4, 5 and 6-horse-power, forming the greater bulk of the exhibits, and amongst these the practically vibrationless "Bardon" car attracted great attention. Another great feature of the exhibits was the evidence that the different functions of the engineer and the carriage builder in the making of an automobile were being evolved and settled in the only way in which it is possible in the petrol cars, where a rigid frame is the foundation of the motor and the carriage. The engineering was better in every respect, design, fitting, and finish, and as the larger firms are getting a better grip of the matter. The smaller cars are running with less noise, smell and vibration, than they were, although there is yet great room for improvement in this respect. The carriage building on these cars has resolved itself into variation of the Tonneau, as it is called, a front seat for two, more or less on graceful lines, and a removable back with entrance behind, and two seats with more or less accommodation than the front, set more or less on the angle, according to the taste or skill of the builder. The effect, when well thought out and finished, is not unpleasing, as was amplified in the exhibits of some of the French firms and agencies, a Tanhard & Lerasur and a Decaurille being in this respect especially noticeable. The large cars with petrol engines were chiefly of English manufacture, the Motor Manufacturing Company and the Daimler Motor Company, both of Coventry and London; these two companies have held the premier position for some time.

The "Napier" car is being pushed rapidly to the front as a powerful and efficient automobile, but it has not yet had the test of time which the two other companies have experienced, and it remains to be seen

whether it will accomplish all that is claimed for it by the makers and those interested in it. There must be some error in description when the nominal horse power of an engine is said to develop an increase of from 25 to 33 per cent. on the brake. This is one point which might be taken up by Automobile clubs, and the rules for deciding the horse power of an engine settled internationally. The laws of mechanics are not so much at fault that this cannot be definitely stated and an international rule of measurement fixed. There were a greater variety of bodies shown amongst the larger powered cars than amongst the smaller, but the tonneau body was here, as in the smaller sizes, the favorite.

In the steam division, there were fewer entries, but the public interest in these little cars never ceased, and from the hour of opening till that of closing the public crowded around the stands of the "Locomobile," the "Gardner-Lerpollet," the "Hastings," and the others where steam cars were shown. There is no question about the "catching on" of the little "Locomobile" if things go on as they appear to be doing.

The large cars exhibited with the Gardner-Lerpollet engine, by the British Power, Traction & Lighting Company (Limited), and the agency firm were very fine specimens of engineering work. As the King has ordered one of these cars to be specially built for him, and a similar one was on exhibition, the stand was constantly crowded with visitors and customers.

Steam has an undoubted future before it as a motive power for light road vehicles. Its elasticity, high rate of power for weight of engine, and greater adaptability to circumstances, compensate for the greater cost of fuel, per run. There is much to be done before it can be said to have reached its limit, and the demonstrations in the arena, where the almost silent and vibrationless cars were running, were watched with an appreciative attention, interest being equally divided between the large and the small cars, a single seated landaulette of very nice proportions and excellent workmanship being especially noticeable, and meeting with a great deal of favorable comment as a suitable solution of the vexed question of how to provide a fairly good looking closed carriage.

The electrically driven carriages were of a totally different class to the others, and with these, principally American, your readers are perfectly familiar. Of all those with which demonstrations were made in the arena, the large electric chariot exhibited by the British & Foreign Electrical Vehicle Company (Limited), a continental built car, was the most noticeable. Of great size, carrying two people in chariot-shaped seats and two on a raised seat behind, and painted ivory white, relieved with gold moldings, it moved round the arena more like a swan in its silence and impressiveness of latent power than a machine. This was absolutely the most silent automobile in the show which was run in the arena. Standing close beside it as it passed on the hard wood pavement, it was not heard. The City & Suburban Electric Carriage Company had on their stand a grand hansom, an omnibus, and a double landaulette, none of which were tried. They also exhibited a Victoria, or park phaeton, the property of the Queen. There were other electric vehicles shown, some of which were run in the arena, and one, a victoria, by the "Still" Electric Company, was a very graceful carriage, and approached very nearly to what is wanted by many people, a carriage easy of access, which can be driven by a servant. Four-wheel dog cart phaetons were also shown by the Canadian Electric Vehicle Company, in which the seats were raised high, too high for graceful appearance, and driven by chains and sprocket wheels, which were very noisy and detracted very much from the favorable impression with which the public regard electrically driven vehicles.

The finish of the carriages generally was very good. Those who are responsible for the carriage building have not yet grasped the main features of what is essential in a road machine. Traveling at a comparatively high speed, and being nearer the ground than horse drawn vehicles, a greater amount of dust and dirt is gathered. Everything which will hold dust should be discarded in the building finish. Cloth and silk and wool laces look nice, but are quite out of place. Leather cloth of the different qualities and makes, Morocco and special dressed hides only should be used, and buttons tufts, etc. entirely discarded, a few runs on dusty roads filling button holes and laces with dust and dirt and making a well finished car look shabby in very little time. The painting is running into dark and quiet colors, highly colored vehicles being in the minority. White and grey, with light blue and crimson linings looked exceedingly well. Carmine and chocolate were well represented. Green in all shades appeared to be the favorite.



The American vehicles were fitted with the most appropriate lamps, many of the English and lighter continental built cars having small carriage lamps for candles, useless on a dark night when traveling over six miles an hour. Wheels of equal size are being adopted. These are of some advantage, but many of the cars had cut down the hind wheels and were too low for comfort or appearance, and the hind wheels, when a deep body for four persons is used, looked less than the front ones, the small cars having hind wheels 2 inches larger looking much the best. The amount of business done was said to be considerable, and if all the statements made were correct with regard to the business done at the Crystal Palace in November and since, including this recent exhibition, quite half a million pounds sterling must have been paid for automobiles delivered and on order. America and France are extremely desirous of doing business in automobiles with England, and show-rooms are being opened in all the principal thoroughfares, where the products of either country can be procured.

#### THE CHAUFFEUR AND HIS ART.

UP to the present time, in my various letters, I have only referred to the accidents happening to "chauffeurs" either by their imprudence or excessive speed. I must now, however, call attention to casualties caused by their negligence. These accidents, which happen frequently, are of various kinds, but are little heard of, as their authors take good care not to boast of them.

Generally speaking, the "gentleman" who drives his own machine possesses but a mixed idea as to how it should be driven. He knows how to use the levers and pedals. After a little experience he can drive his carriage well and has a certain sporting *amour propre* in taking turns. He changes his speed perfectly, uses the brake well, and has, in fact, all the qualities of a jockey who rides a well-trained horse.

At the side of this "gentleman" sits a professional machinist. He represents science—latent. He has no right to speak as long as the carriage travels well. His rule only begins when there is a breakdown. At this moment the "gentleman," as a rule, places everything in his hands, and on him falls all responsibility. The one claims the merit for brilliant driving, whereas the other has the "dirty work"—oiling, repairing pneumatic tires, etc.

A good machinist who has had a little practice and who "catches on" to slight accidents is naturally highly considered by his employer. He should be prepared for any casualty, should know the road and should, above all, be thoroughly acquainted with the motor, not only as regards its power but construction, so that at the end of a day's run he can certify that all is well for the morrow.

If, therefore, a "chauffeur" has a good machinist with him, all should go well. He should use his arms, and his man should do the thinking.

Unfortunately, such is not the case; good machinists are rare to find. I know but few, and I can frankly state that if all those who call themselves machinists were really such the workshops of the leading constructors would long since have been without workmen.

As a rule the caste of machinist consists of inferior workmen, as those of any value remain in the factories.

These workmen, after several lessons, obtain a driver's certificate, which is easily obtained. Generally, they know how to change a pneumatic, oil the wheels, fill the reservoir with essence and that is about all.

Besides this, they pretend to know everything, in order to make believe that they are earning their wages, and when a breakdown happens their advice generally is that the whole carriage should be pulled to pieces in order to discover the cause.

These reflections are given with the idea of persuading owners of automobiles not only to be on their guard against these so-called machinists, but to thoroughly study the working of their machines. Few among us are really good judges of pace, and fewer are really cognizant of the detailed construction of the carriages we drive.

I should not think of asking a "gentleman" to put patches on his pneumatics, or to oil his cogs. This is his employee's work, but it is for him to take every precaution to guard against accident, personal or otherwise.

For, as I have already pointed out, the majority of machinists know little. I have not, however, stated that this lack of knowledge may be attributed to carelessness or idleness. This is the great danger, for in this case the "chauffeur" risks everything. He sup-

poses his machine to be in thorough going order, and it may be just the contrary.

I tremble when I think that the bolt of a connecting rod may be out of place, or that the brake may be out of order, and thus liable to cause the carriage to turn completely over. It also makes me shudder to think that out of a hundred "chauffeurs" perhaps not ten take the precaution to thoroughly inspect their machines before starting.

The moral is this: If you do not wish to break your own neck and the necks of your friends, learn to know your machine in all its details.

Before starting on a journey cast your "eagle eye" on every part; try your brake and look to the oiling. You may lose ten minutes or a quarter of an hour, but this may perhaps save you a limb or your life.

LEON AUSCHER.

*New York Herald.*

#### THE DRESS OF THE AUTOMOBILIST.

THE automobile, or locomobile, may not be a thing of beauty. But it has come to stay. Purely æsthetic considerations will not avail. It is the case of the railroad train and the bicycle over again. The man on horseback, and the stage coach, fitted into the landscape much more harmoniously than the swift products of the age of steel. We may hesitate to admit it, but it looks as if it were the truth that as the days go by we are sacrificing the joy of the eye to other considerations. Just look at a coach going up the avenue, drawn by four spanking bays and driven by an expert at the ribbons. Could there be anything more inspiring? The horses seem to know that they are observed of all observers. The music of the horn supplies the last triumphant touch. Who does not wish to be one of that joyous company? That is the ideal way to go to the races, to see the country. That is life. Look at the other picture. Instead of the fine dash and glitter of the horses you have—a machine that puffs and shrieks and leaves behind it a cloud of steam and a smell. Instead of a number of men in their most precise dress and women in their best bib and tucker, you see a number of persons dressed in outlandish costume and catch a glimpse of strained and excited faces. Speed is the one thing sought for. Perish all ideas of grace and dignity. It is only the presence of the bicycle policeman ever vigilant that restrains the man who stares straight ahead with his hand on the lever. If he had his way he would dash past the clubs at the rate of forty miles an hour, and take the risk of spreading death and desolation in his wake.

Dress is an important thing. And it is the togs of those who use the horseless carriage, or rather who operate that weird affair, that most do affect the spectator. The *Haberdasher*, a very observant trade journal, speaking on this subject, says: "For automobilists a specialty is being introduced in the shape of a sort of yachting cap with a glazed peak and fitted with a transparent vizor which can be drawn up or down at pleasure. The idea is, of course, to protect the eyes from sudden assailments in the way of dust or insects. I observe, however, that some motor owners prefer to protect themselves by fixing a wide expanse of sheet glass on their machines. Speaking of automobilists reminds me that their rapid increase in this country of late has resulted, as was inevitable, in the establishment of a fashion department of their own. A neat rig of the modern motorist consists of a plain but smart-looking jacket made of leather or leather cloth and designed to protect the wearer from the rush of air as he whirls along, an important point in modern machines. For the same reason it fastens high up in the neck, and long-wristed gloves or gauntlets are worn with it to prevent the wind passing up the sleeves. No buttons are visible; they are inside the jacket. For those who do not like the appearance of the leather the ordinary cloth is used made up in four or five thicknesses or lined with the leather. In view of the great speed attained by motors nowadays, and the exposed position of the driver, this question of warmth becomes a serious one." Compare that rig with the trim garb of the man who rides, or the correct attire of him who sits on the box seat of a coach. It is a satyr to Hyperion.

Ruskin arose in his might and protested with entertaining vituperation when they proposed to run a railroad through the heart of his beloved Lake District. But the art critic went down in defeat before the period's notions on the subject of progress. So, too, we shall have to reconcile ourselves to the signs of the times. We can't hope to be better than our period. But at any rate let us rejoice that the horse shows no signs of perishing from the land.—*New York Sun.*



COMBINATION DELIVERY AND PLEASURE  
AUTOMOBILE.

(See "Latest Styles.")

THE two illustrations show this ingenious combination vehicle. In one we have a break, in the other a business wagon. The transformation is made by shifting the top; using a rear seat without the top converts the business wagon into a break, the entire change consisting in the one change, that is with the top and no rear seat it becomes a business wagon; without the top and with the rear seat it becomes a break. The vehicle is built by the National Automobile and Electric Co., Indianapolis, Ind.

CANDA PHAETON.

(See "Latest Styles.")

THIS neat automobile is manufactured by the Canda Manufacturing Co., of Carteret, N. J. It is propelled by a gasoline engine and is fitted with all improvements that will increase its power. It is simple in its operations and the rider has perfect control of every movement. It is a very desirable vehicle of its class, and being made of the best material and by skilled workmen, it cannot fail to give satisfaction in those particulars.

AUTOMOBILE RACES.

THE Automobile Club, of New England, held the first annual race meet at the Country Club track, Brookline, Mass., on June 15th. The attendance was large, and the various events were interesting. Some of the events did not fill. The following are the results:

First event—Electric pleasure vehicles for two passengers, open to all, 2½ miles:

1. Riker Motor Vehicle Co.; manufactured by Riker Motor Vehicle Co.; operated by A. L. Riker. Time, 9m. 7 2-5s.
2. F. E. Queeney; manufactured by Electric Vehicle Co.; operated by F. E. Queeney. Time, 10m. 38 1-5s.

Third event—Electric racers, open to all; five miles:

1. Riker Motor Vehicle Co.; manufactured by Riker Motor Vehicle Co.; operated by A. L. Riker. Time, 9m. 8 2-5s.

Fourth event—Steam vehicles for two passengers, stock patterns; open to all; five miles:

1. Locomobile Co.; manufactured by Locomobile Co.; operated by T. E. Griffin. Time, 12m. 41s.
2. Stanley Mfg. Co.; manufactured by Stanley Mfg. Co.; operated by Walter Safford. Time, 15m. 2-5s.

Three starters; one left the track after finishing one lap.

Fifth event—Steam vehicles for four passengers; stock patterns; open to all; five miles:

14. Locomobile Co.; manufactured by Locomobile Co.; operated by T. E. Griffin. Time, 9m. on eighth lap.
14. H. McLaughlin; manufactured by Locomobile Co.; operated by H. McLaughlin. Time, 16m 9s.

Sixth event—Gasoline pleasure vehicles; open to club members only:

16. Larz Anderson; manufactured by New Winton Motor Car Co. Broke down in sixth lap.
- Robinson; manufactured by J. T. Robinson; operated by Robinson, Jr. Time, 12m. 31 2-5s.

Seventh event—Steam racers; open to all; four and one-half miles:

19. Harry Fosdick; manufactured by Mobile Co.; operated by Harry Fosdick.
20. Locomobile Co.; manufactured by Locomobile Co.; operated by T. E. Griffin. Time, 11m. 40 2-3s.

Eighth event—Motor tricycles; open to all:

21. Geo. C. Cannon; manufactured by Orient Mfg. Co.; operated by Geo. C. Cannon.
22. Peter J. Berlo; manufactured by De Dion-Bouton Co.; operated by Peter J. Berlo.
23. K. A. Skinner; manufactured by De Dion-Bouton Co.; operated by K. A. Skinner. Time, 8m. 30 4-5s.

34. Sanborn. Time, 9m. 2 4-5s.

Ninth event—Gasoline vehicles and quadricycles (less than 1,000 pounds in weight); open to all:

24. H. H. Brown; manufactured by Autocar Co.; operated by H. H. Brown. Time, 11m. 4-5s.

25. De Dion-Bouton Co.; manufactured by De Dion-Bouton Co.; operated by K. A. Skinner. Time, 9m. 34s.

Tenth event—Gasoline vehicles (weighing between 1,000 and 2,000 pounds); open to all:

26. De Dion-Bouton Co.; manufactured by De Dion-Bouton Co.; operated by Louis Francaise. Time, 11m. 40 2-5s.

Twelfth event—Final race between the three vehicles making the best time in the preceding races (excepting race No. 8):

Riker; manufactured by Riker Motor Vehicle Co. Time, 8m. 47-4s.

25. De Dion; manufactured by De Dion-Bouton Co. Time, 9m. 38s.

Judges, A. W. Stedman, Royal R. Sheldon, F. Tudor, Jr.; clerk, F. A. Desousa; captain, Knight Nefte; starter, A. D. Peck.

MOTORS FOR HEAVY HAULING.

THE progress of events in the history of heavy traction on common roads by power is a little instructive. The advances made are slow, out of all proportion to the anticipations formed a few years ago when Parliament sanctioned the use of self-propelled vehicles on our highways under conditions accepted with exultation at the time. During all this period individuals, more or less enthusiastic, have been, we may charitably hold, learning facts which have been brought home to them, sometimes very rudely, and seldom or never, we fear, pleasantly, with an important bearing on the present and future use of motor vans. The first of these was the discovery that enormously more power is required to work a van properly than was anticipated. The old style of reasoning was that a real horse-power was 22,000 foot-pounds per minute, and a van load for a good horse was 1½ tons, including the cart. One indicated horse-power being 33,000 feet per minute, or 50 per cent. more than a live horse-power, one mechanical horse-power ought to be enough to haul 30 cwt. It was not found out until various trials and disappointments had done their work that a mechanical horse-power is in practice equivalent to about one-fifth of a flesh-and-blood-and-nervous-energy-horse-power. To-day few persons of experience would provide less than ten indicated horse-power to do the work readily accomplished by two draught horses. The second lesson learned was that everything had to be made much stronger, and therefore more heavy, than was at first deemed necessary. To all intents and purposes, the motor-van makers are repeating the experiences of the traction engine makers. The result of all this is a not unnatural demand for such changes in legislation as will permit much stronger and heavier vans to be used than are now permissible.

\* \* \* \*

Jarring and tremor are as effectual as direct violence in injuring mechanism. Scores of examples of this might be cited. One will suffice. In a motor van a long horizontal rod was used to couple the steering gear to the leading wheels. The rod was broken solely by vibration. It was replaced by a much heavier and stronger bar. That was broken in much the same way, and finally guides had to be fitted to steady the rod and prevent it shaking.

Very earnest and well-directed efforts have been made to establish services of motor-vans on common roads, in the belief that such a service may be cheaper and more convenient than railway work. We cannot believe that this will be found possible, save under very peculiar circumstances.

\* \* \* \*

So far as past experience goes, recent and comparatively ancient, it appears that under certain conditions the motor-van may be worked with advantage and considerable economy. As stated the War Office authorities have wisely decided to give motor-vans a trial. This is as it should be, and we anticipate that vans will be produced able to render excellent service. We have no evidence to show that these vehicles can ever compete successfully with railways. On the contrary, their function seems to lie rather in feeding them than in fighting with them. Up to the present moment the data available concerning the cost of working such vans is too meagre to permit any trustworthy general conclusions to be drawn. Ultimately, no doubt, the best possible type of motor-van will be evolved, just as by the survival of the fittest what is apparently the best form of bicycle has been evolved. But we have only to talk to the makers of motor-vans, and ask each what he thinks of the vans of other makers, to realize how imperfect such machines still are, and how much it is admitted, by those who ought to be most competent to pronounce an opinion, remains to be done.—*London Engineer*.



## LONG ISLAND,

ITS SUMMER RESORTS, SEASIDE AND SUBURBAN—FINE ROADS FOR HORSES  
AND CARRIAGES, AUTOMOBILES AND BICYCLES.

SUMMER time finds New York city crowded with visitors from all parts of the world to view the city, enjoy the ocean, river and other retreats so numerous and within so short a ride from the hotels of the city. To such as well as to the residents of the city Long Island offers exceptional advantages—the ocean with its sandy beach; the Sound with its high bluff, delightful coves and woodlands; the interior with delightful drives over roads of almost unequalled excellence. To those who travel by rail the Long Island Railroad offers extra facilities; two of its main lines traverse nearly the entire length of the island, the one along the Atlantic coast line terminating at Montauk, the other on the Sound ending at Greenport, while a third but shorter section ends at Wading River on the Sound, opposite New Haven harbor, while cross lines gridiron the eastern half of the island.

for a desert sought in Europe. This is emphasized and increased by a journey on Long Island. The same sun that gives to Italy its summer rises from the depths of the waters to set in glowing colors a landscape unsurpassed to eyes wearied by the ledger and the law book. Try it, you who doubt, and be convinced. Take the train some morning in summer and discover how close to the noise and bustle of New York is the glade, the sheltered nook, the green expanse of plain and the peace and repose of a prosperous and happy country. Every variety is found in a ride between meals. To the right as your face is turned eastward is the Great South Bay, the long stretch of Fire Island, the finest fortification of nature on the earth, and beyond, old ocean, rolling breakers in from France. To the north the hills rise gently, until the shores of the placid Sound are a broken series of parapets lifting themselves like miniature Gibaltars hundreds of feet above the water. One must see it all to fully enjoy the trip. The scene is full of restful villages with perfect roads for wheeling, automobiling, horse driving or saddling, and many places for wayside refreshments and repose. From the summit of the hills the view extends for



THE ALLEY, DOUGLASTON.

Geographically, Long Island lies between the mighty Atlantic, whose waves surge a never-ending symphony upon the low-lying beaches along its southern shores, and the Sound, that great inland tidal sea, whose surface is ever dotted with the white-winged fleets of commerce. Its ocean coast-line, which is level from Brooklyn to the far-away picturesque Shinnecock Hills, almost at its eastern end, runs nearly east and west, and it is the only section of the United States whose ocean boundaries have this direction. The influence of this peculiarity upon its climate is very marked, as the prevailing winds, wafted over the ocean's surface in summer, are invariably from the south, and they temper the rays of the fiercest midsummer sun.

It is often said of the enterprising American that he takes his pleasures too seriously. It is difficult for him to get away from business, and he carries even into the hours of recreation a suggestion of the counting-room and office. He realizes this himself, for his physician calls it often to his mind. Hence this may account for the fact that he takes his vacation sternly and goes far and spends largely to find it. All foreign countries are picturesque; the novelty exaggerates their characteristics, and to strange eyes the hills of Scotland are of greater grandeur than the Catskills, and the mountains of Switzerland more rugged than the Rockies. Thus a vacation is alleged to be more effective if it is sought at a distance, and one imagines that he sees greater wonders in lands that are new to him, simply because they are new. This may explain the fact that a paradise is neglected in America

miles. The winds deal gently in summer with the waters, and there are no storms to buffet the pleasure craft that dot the scene with their white sails flashing in the sun. As far as the eye can reach, it is the blue of the waters with the blue of the sky, softened by a tinge of green for the Connecticut shore beyond. Few countries offer so charming a vista, non excel it.

Totally different in appearance, topography, and soil is the northern shore, which skirts Long Island Sound. Here the sandy beaches have given way to bold and, in many cases, precipitous bluffs, into and between which the Sound has broken and spreads itself out in placid and picturesque bays. Great arms of this inland sea stretch here and there into the interior. Upon their shores are charming sites for summer homes, where the loveliest of marine views may be enjoyed amid surroundings of field and meadow. The central portion of Long Island partakes of the characteristics of a farming country, in which agriculture has made advanced strides and been carried to its higher perfection. In soil and climatic conditions it is admirably adapted to vegetable and fruit farming. Thousands of its broad acres are being scientifically and intelligently tilled, and from this region there comes to the market of the city of New York daily contributions in enormous volume, and of the finest quality.

To the artist, whether of brush or camera, Long Island offers, not in the sense of time, a new field, yet one which is ever new and fresh in opportunities, and prolific of subjects. Its woodlands, its meadows, its broad level moors, with the bright sea beyond, will challenge the skill of hand and eye as long as art shall last. Its Dutch windmills,



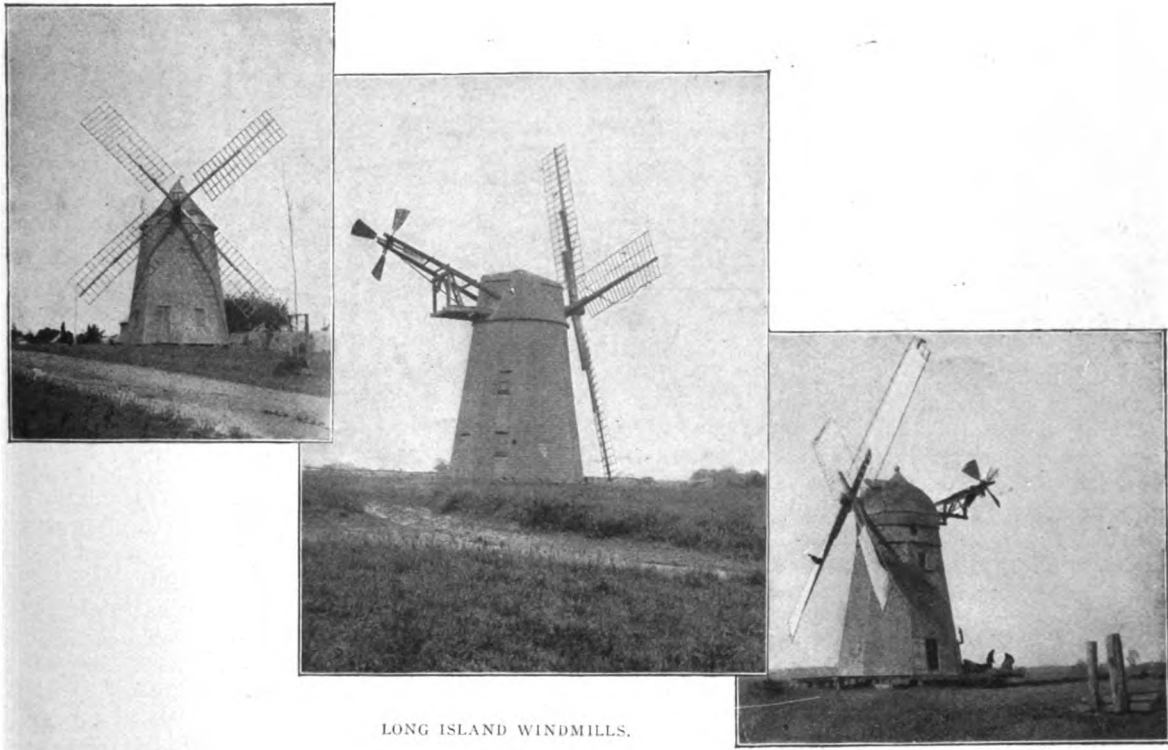
choice bits of antiquity and landmarks of other days have been in the past, and will be in the future, an inspiration for many a canvas.

More than twelve hundred trains are operated on Long Island daily, and six hundred and fifty arrive and depart from Brooklyn and Long Island City during the summer. With such an array of natural advantages, its proximity to New York, and the exceptionally fine facilities of transportation and intercommunication, Long Island may properly be called the ideal summer territory of the Union. It is furnishing homes each year for a larger throng. Its popularity has

paradise. Many of these paths follow most picturesque roads, under the grateful shade of overhanging oaks, giving here and there lovely vistas of the blue ocean, and broader views of the rolling fields and attractive villages. Many thousands of wheelmen and automobilists have come to realize the delights of the island, and its unequalled advantages for touring.

Excellent accommodations can be found everywhere on the island, and the majority of the inns and hotels cater to the cycling public.

The many sections of the Good Roads Association constantly keep



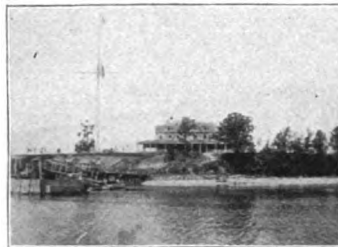
LONG ISLAND WINDMILLS.

spread far beyond the limits of Greater New York, and an ever-increasing percentage of its summer residents are coming from the Middle, Southern, and Western States, as they find within its borders all the requisites of a delightful summer-land. But not only does Long Island appeal to the summer resident. It is as well an ideal place in which is established a permanent suburban home. Its nearness to New York, the superiority of its railroad service, the excellence of its school system, and the high quality of its society all unite in producing conditions which are most eagerly sought by those who wish to establish a home of their own outside of the limited confines of the city. Long Island is known everywhere as the Cyclists' Paradise and the Automobilists' Arcadia. The splendid roads of the

roads and paths in good condition, and the signboards erected by the L. A. W. giving directions and distances make touring on the island a pleasure not known in any other section of the United States.

The Long Island Railroad Company was the first railroad in the United States to build and equip special bicycle cars with the very best appliances for the transportation of bicycles without injury.

"Long Island Sports and Pastimes," a small handbook issued by the Long Island Railroad Company, has a good map of the roads and paths of Long Island, together with tables of distances, railroad timetables, hotel lists, suggestions, and, in fact, complete information in condensed form. This book will be sent to any address upon receipt of two-cent stamp to cover postage.



OYSTER BAY PLEASURES.

north and south shores, the great number of beautiful cycle paths and smooth hardedge paths, make unsurpassed wheeling. While the hilly country of the north shore gives the tourist climbs, coasts, and extended views, the level south shore makes long trips a matter of little exertion and affords innumerable glimpses of inlets, bays and the ocean. There has been in the recent past the greatest activity in road improvement all over the island; there are now more than six hundred miles of macadamized thoroughfares. Besides this, there are hundreds of miles of well-graded and excellently maintained bicycle paths for the use of wheelmen, for whom Long Island is a

Long Island is particularly fortunate in having the service of the New York and New Jersey Telephone Company, which practically reaches the uttermost parts of the island. Exchanges or pay stations are now located in almost all of the towns and villages from Brooklyn eastward, as well as in the stations of the Long Island Railroad Company, thus placing the residents within easy touch with each other and with the points they most need to reach, as well as making it possible for them to communicate with all the places in the vast telephone system—Chicago, Boston, St. Louis, being brought within as easy speaking range as New York or Brooklyn.



## THE PRODUCT OF HIGH GRADE CARRIAGES.

## THE OPINIONS OF CARRIAGE MANUFACTURERS—NO DECREASE.

IN previous numbers of THE HUB we took occasion to dispute the statement of our Philadelphia contemporary, as regards the assertion made, that there was a decline in the production of high grade carriages in the United States. The contradiction by us was based upon personal observation and a long connection with the carriage industry, and also statements made by the leading New York City carriage builders and dealers. Feeling, however, that the decision should be left to the trade, we forwarded the following circular letter to men whose houses were among those of twenty-five years ago, builders of fine work at that time; others whose long experience fitted them to judge; others again whose connection with the carriage industry was of more recent date; and thus, reach all lines of builders in the localities where the building of vehicles constituted a factor of importance, and give to builders of all kinds an opportunity to express their views on the subject. The number of answers received precludes the possibility of publishing them this month.

## CIRCULAR LETTER TO THE TRADE.

We enclose herewith reprint of an article that appeared in a contemporary journal, in April, 1901. THE HUB has taken occasion to dispute the leading point in this article, viz., that less fine carriages of high grade are now being built than there were a quarter of a century ago. "Not smaller in proportion to the population, but actually smaller in enumeration."

THE HUB believes that such a statement is calculated to injure the carriage trade of the United States in the eyes of foreign buyers, being made as it was by so prominent a journal as the one that published the article in question, and to counteract its effect THE HUB is desirous of obtaining for publication the opinions of prominent manufacturers on this subject.

Understand THE HUB does not question the great increase in the production of low priced vehicles, but we are not prepared to believe that there has been a decrease in the actual production of fine work. On the contrary, we hold that there has been a marked increase in the production and sale of fine and high grade carriages.

What we would like to have is your opinion regarding the increase or decrease in the output of fine and high grade carriages at the present time, as compared with that of a quarter of a century ago. If THE HUB is wrong, and there has been an actual decrease in the quantity of American carriages of the better grades, we would like to know it, for if such is the case, then the carriage business of the United States stands alone as our one industry that has retrograded, and the conclusion is forced upon us, that steps should be taken to place this industry on the same footing as others that are now starting the Old World by their superior qualities.

May we not ask of you that you will give us your opinion on this most vital point, "the decrease in the output of fine and high grade carriages." The first of our foreign exchanges to reach us since the publication of the article in question reproduced it in full and states as a fact that there has been no such a decrease in the quality of English carriages and there can be no question regarding the position of other foreign carriage trade journals, as it is to their interest to discourage the purchase of American carriages by their own people and by the people of those countries, who now purchase their carriages of European builders.

Asking the favor of an early reply, we remain,

Respectfully,

TRADE NEWS PUBLISHING CO.

## THE DECLINE IN FINE CARRIAGES IN THE UNITED STATES AND ELSEWHERE.

(From the *Carriage Monthly*.)

A correspondent calls our attention to the fact that the number of what are called fine, or high grade, carriages now being built is much smaller than it was a quarter of a century ago. He means not smaller in proportion to the population, but actually smaller in enumeration. Undoubtedly he is correct. How shall it be known that he is correct, and what is the explanation of the fact?

That the number is less is apparent from the following: At the Centennial Exhibition held in Philadelphia in 1876 there were shown

great numbers of fine vehicles from France and England and other European countries, as well as from the United States. At the Paris Exposition, held two years later, there were, however, only 161 high grade vehicles of French manufacture and 57 made in England. At the Exposition of 1889, held in the same city, the number of French made vehicles of this description had dwindled to 136, while England contributed only 31. At the Paris Exposition just closed, the French builders exhibited only 111, while English makers were content to show a paltry 20, and the number from the United States was not large. It is safe to say that whatsoever articles of use or convenience are especially popular at the time of a great national exhibition, are likely to find their way into the displays in considerable numbers. Judged by this rule, it is apparent that there has been a steady diminution of fine vehicle building in France, England and the United States, from 1876 until now.

If we ask for the explanation of the fact, we shall find that each country named has a different answer to give. Shortly after our Centennial Exhibition the carriage builders of this country began to turn out what was known as cheap work. They sold their vehicles at a very low price, and succeeded in placing them in all parts of the country. But the work did not prove satisfactory and, almost immediately, there arose a demand for something better. The use of vehicles was not to any extent discontinued, but large numbers of farmers and other persons became dissatisfied with the cheap grade. In answer to this demand our wholesale factories begun to improve their work. They have steadily continued to improve it until now when it may be fairly said that many factories, which produce vehicles in a wholesale way, turn out what may be considered fine work, in the sense that it is good work and well worth the money charged for it, though it is not what, prior to the Centennial Exhibition, was considered work of high grade. These improved vehicles have, to a very considerable extent, displaced the finer vehicles, and it is this fact which very largely accounts for the smaller number of high grade vehicles at present to be seen in the United States. At the same time it must be remembered that since the rise of the trolley system, with its luxuriously equipped cars and its astonishing speed, many a man, who formerly kept a carriage of his own, finds it more convenient and less expensive to travel by street railways, and if he wants to enjoy a carriage ride with his family he can send to the nearest livery stable with far less trouble than he could maintain a private establishment. This, then, is the solution of the problem so far as the United States is concerned.

As regards France the reason for the decline in the number of high grade vehicles in use is also due to the fact that rapid transit can now be had by other means as by automobiles, that France has lost her export trade, as elsewhere explained, and that in recent years the people of that country have not been able to purchase lower grade vehicles in such quantity as to warrant the establishment of large wholesale factories like those in America.

There are probably a larger proportion of high grade vehicles in use in England than in any other country at the present time. No part of the United Kingdom has yet begun, in a wholesale way, the manufacture of vehicles which are not cheap, but which cost less than the fine grade of which we are speaking. At the same time carriage riding has been largely discontinued there, as here and in France, on account of the introduction of the trolley.

## THESE SAY INCREASE, NOT DECREASE.

## NEW ENGLAND.

AMESBURY, Mass., June 12, 1901.

Editor of THE HUB:

Dear Sir—Replying to your valued favor of the 10th, asking our opinion as to the "increase or decrease in the output of fine and high-grade carriages at the present time, as compared with a quarter of a century ago." This is not an open question with us. The elimination of the cheaper grades of carriages from this market, and the increase in the production of the better qualities, is especially noticeable in Amesbury. While our output is less in number now than it was, say ten years ago, the grade has been so much improved that the value of goods sent out from here is well up to that of the time when a much larger number were made. When the "epidemic" on cheap carriages was raging, Amesbury lost considerable business, but for a year or two past it has largely regained its prestige, and we know that it is due to the increasing demand for better carriages. Our manufacturers who formerly built the cheaper grades have either gone into making better goods, or quit the business. Amesbury is now building more high-grade carriages than ever before, and its manufacturers are confident that the outlook is good for a still further increase in this direction.

Very truly yours,

J. T. CLARKSON & Co.



BOSTON, Mass., June 12, 1901

Editor of THE HUB:

In response to your very courteous request for our views on the alleged "decrease in the output of fine and high-grade carriages," we must express our doubts as to such a decrease.

That there have been changes in conditions within the carriage trade during the last twenty-five years is undeniable. The industry has progressed. Thousands of what can be called fine grade carriages are now manufactured in a wholesale way, both light and heavy, and this class of product, we maintain, is being yearly increased. We could name several large factories within a hundred mile radius of our city whose output of fine work would far more than off-set the retirement from the market of the product of all the former smaller builders of a similar grade within the same radius.

As to the strictly high-grade custom city builder, his product is to-day more in demand than ever. The city retailer, compelled to handle mainly the better productions of the wholesale manufacturer of the fine grades, is obliged to charge the custom builders' price at retail. The high-grade city builder, with improved facilities, is to-day producing, with ever increasing demand, more high-grade vehicles, better designed and better constructed than at any time in the history of the trade. The increasing wealth among his patrons, creating private stables of a dozen horses and carriages where formerly two or three was the average, and the growing number of wealthy people, have combined to broaden his market beyond the limits of ten or twenty years ago. We believe the production and sale of fine and high-grade carriages to be larger than ever before, and still on the increase. The mistake of classifying wholesale builders all in a bunch as cheap builders is behind the times. Many high-grade city manufacturers build specialties in wholesale quantities.

Very truly yours,  
J. P. & W. H. Emond (Incorporated).  
W. H. Emond, Treasurer.

AMESBURY, Mass., June 12, 1901.

Editor of THE HUB:

Dear Sir—We have your letter of June 10th. Anything we might have to say in regard to this matter would be of necessity an opinion only, as we have no facts or figures before us.

Taking into consideration, however, the enormous increase of the wealth of this country that has taken place during the last quarter of a century, and more especially how great this increase has been in the multiplication of large fortunes in our principal cities, who would be the principal users of the carriages of the kind we presume the article in question refers to, it is difficult for us to believe, and we would not be prepared to believe, without more conclusive evidence, that the number of these carriages manufactured at the present time was less than it was at that time.

The writer in the monthly bases his opinion on the number of carriages of this class exhibited at the various large exhibitions held in the last 25 years, and he infers because the number of carriages exhibited at the various exhibitions has been growing smaller, that the number of carriages made has also been growing smaller. This of course is an inference only, and there is nothing offered, and apparently nothing can be offered, to show that of necessity there is any relationship between the number of carriages exhibited and the number of carriages annually manufactured.

Our own opinion would be from the facts stated above, that if figures were accessible giving the actual number of carriages of this class built now and 25 years ago, that there would be nearly double as many made now as there were then.

Yours truly,  
HASSETT & HODGE.

MERRIMAC, Mass., June 20, 1901.

Editor of THE HUB:

Dear Sir—Your favor of recent date received. We do not believe that a close investigation of the carriage industry would warrant such an assertion as that referred to.

There has been no retrogression in the carriage builders' art. What was considered a good carriage thirty or forty years ago would be looked upon to-day as a cheap vehicle, notwithstanding good material was used. In no country has such advancement in the quality of goods been made as in the United States, and the carriage builder has a right to feel pride in the fact that the industry he is interested in has kept pace with the procession. Our work was never so fine as it is at the present time, which, so far as we are concerned, is a flat contradiction that there has been a decrease in the production of fine carriages. The bicycle and the trolley system can be counted out. The class of people who can afford a stable establishment are not patrons of the trolley cars to any extent except as occasional convenience. Yours truly,

S. C. PEASE & SONS.

BOSTON, Mass., June 13, 1901.

Editor of THE HUB:

Dear Sir—We must take exception to the statement that there are less fine grade carriages built now than twenty-five years ago. We think such might have been the fact a few years ago, when many people used the cheap grade carriage, but we now think that people have come to their senses and are buying a high-grade carriage, and the highest grade at that, as our experience, being strictly manufacturers of the highest grade carriage, and our sales are continually on the increase.

Very respectfully,  
SARGENT & HAM CO.

CENTRAL STATES.

ALBANY, N. Y., June 12, 1901.

Editor of THE HUB:

Dear Sir—Answering yours of the 10th, regarding the statement made by *The Carriage Monthly*, that less fine carriages of high grade are now being built than there were a quarter of a century ago, would say that we do not believe this to be true. It certainly seems to us that the output to-day is much larger than it was twenty-five years ago.

Yours truly,  
JAS. GOOLD CO.  
W. D. GOOLD, Pres.

WATERLOO, N. Y., June 12, 1901.

Editor of THE HUB:

Dear Sir—Your favor of June 10th at hand, and find that it is an article written by some person, either through sheer ignorance or with an intent to injure the carriage builders of the United States or to deprecate his own country in favor of the English and French manufacturers. There has not only been a large increase in the number of fine carriages manufactured and used in the United States within the last twenty-five years, but the carriages built during that period have been of finer workmanship, of better style, of greater comfort and possessing merits which were unthought of in the years before, and the money value is more than treble. Go to whatever part of the country you might in the early sixties and fine, high-grade carriages were few in number, but go to any part of the country, wherever you may, and you find in every city, in every town and in every village carriages in quality, in workmanship that would out-class anything which was seen in those earlier periods, and it would be at the rate of at least three or four to one.

Most respectfully,  
WATERLOO WAGON CO.  
FRANCIS BACON, Pres.

WATERTOWN, N. Y., June 12, 1901.

Editor of THE HUB:

Dear Sir—We are in receipt of your esteemed favor of the 10th and note contents. In reply will say that it is our opinion that there are a great many more fine high-grade carriages built in the United States to-day than ever before and this is increasing every year. Do not think there is a question of doubt but what the United States leads to-day in production of fine carriages.

Respectfully yours,  
WATERTOWN CARRIAGE CO.  
WM. J. MILLS, Secretary.

BUFFALO, N. Y., June 15, 1901.

Editor of THE HUB:

Dear Sir—We are in receipt of yours of the 10th inst. In reply will say that we do not think there is a decline. In regard to the trolley cars affecting the sale of fine carriages we do not believe they have. The argument of the trolley car and the fine carriage is inconsistent. Those people that have ridden in carriages and have changed to the trolley car are the people who have ridden in cheap carriages. This statement might cause the inference that the sale of cheap carriages has declined on account of the trolley. This is not the case. The fact is that the rapid increase in population and wealth of this country has brought about a great increase in most every means of transportation with plenty of room for the use and sale of all of them. In our city there has never been before such an array of fine pleasure vehicles as are seen on our drives and in the repositories.

Very truly yours,  
GEO. WERNER.  
Per G. W. W.

BINGHAMTON, N. Y., June 12, 1901.

Editor of THE HUB:

Dear Sir—We are in receipt of your favor of June 10. We do not think there has been any decrease, but on the other hand, we think there has been an increase in the quantity and quality of the carriages that would be called high-grade carriages. We are inclined to think from our observation that the demand and trade on the better grades has also increased. It certainly has not gone the other way. We know in our own experience that this has been the case, as our production each year has averaged us more per job than the year previous, and we think this is also true with nearly all of the makers of a good grade of work.

Yours very truly,  
THE STURTEVANT-LARRABEE CO.  
H. C. LARRABEE, Pres't.

WATERTOWN, N. Y., June 13, 1901.

Editor of THE HUB:

Dear Sir—Your favor of the 10th is before us, regarding the article recently published in *The Carriage Monthly*. We are firmly convinced that this is an erroneous statement. That the number of small builders of fine carriages has decreased there can be no doubt. The reason for this is that large manufacturers of fine carriages can produce a strictly fine carriage for a very much lower price than a small builder. Consequently many of them had to go. But plenty of large manufacturers are to-day each producing twenty strictly fine carriages where former small builders produced one. We are entirely satisfied that there never was a time when so many fine grade carriages were built and sold as the present.

Very truly yours,  
UNION CARRIAGE & GEAR CO.  
C. E. BROWN, Secretary.



UTICA, N. Y., June 13, 1901.

Editor of THE HUB:

Dear Sir—In answer to yours, for our views regarding the number of high-grade carriages built now and twenty-five years ago, we should say there are at least three to one more built now than then. Undoubtedly the great volume of medium-class work now being built may lead to the impression that there is not as much high-grade; I think a careful investigation would prove to the contrary. A good evidence of this is the enlarging of Brewster's plant; they get big prices, and no one disputes their being high-grade. In this city alone there are at least four to one being used to what there were twenty-five years ago. There are many small towns where twenty-five years ago you would not see a brougham or cabriolet you will find now from six to twelve, and not cheap ones, but of high-grade.

Yours truly,

WILLOUGHBY OWEN CO.

READING, Pa., June 12, 1901.

Editor of THE HUB:

Dear Sir—Your favor of 10th to hand and contents noted. Speaking for our city, writer believes there are five per cent. more carriages of good quality used to-day to what there were twenty-five years ago.

Yours truly,

KEYSTONE WAGON WORKS.

YORK, Pa., June 13, 1901.

Editor of THE HUB:

Dear Sir—There are so many high-grade wagons built now that they cease to be curiosities and are no longer exhibited as such. It is the writer's humble opinion that you can find ten of such jobs on the floors of the large carriage dealers in the cities to one that you could find a quarter of a century ago. A visit in the parks of some of the large cities on a pleasant evening or on a Sunday afternoon will surely convince the most skeptical, who have had twenty-five years' experience in observing such matters, that there are more high-grade wagons in use now, in this country at least, than at any former time. Look also at the number and size of the factories in this country now making nothing but strictly high-grade work. Were there as many in existence twenty-five years ago? Was not this so-called "high-grade work" built only by small local builders twenty-five years ago, and was not the fact that each one of these wanted to show up a sample of his workmanship to the eyes of the curious public the reason for the exhibit of such large numbers of them at that time.

Respectfully,

GEORGE W. BACON.

President Hoover Wagon Co.

WILMINGTON, Del., June 12th, 1901.

Editor of THE HUB:

Dear Sir—We have your favor of the 10th. We agree with THE HUB; more fine carriages are built to-day than were a quarter of a century ago, both as a whole and more in proportion. While it is perhaps true less light carriages in number and perhaps in proportion, but certainly many more heavy ones; yes, many more.

Yours, very truly,

LINDLEY C. KENT,

JOS. A. CONLY,

Receivers.

WESTERN STATES.

DES MOINES, Ia., June 13, 1901.

Editor of THE HUB:

Dear Sir—We are in receipt of your circular letter of June 10th. In reply would say that our opportunity for judging this matter is quite limited on account of the very small territory which we cover, hence we can only speak from our own standpoint. In the last four years, although we began to manufacture cheap goods, we have been forced to interest our patrons with something that is of a better grade and our trade has been tending to the better class of goods in the last two years. If there was no demand for a better class of goods we certainly would not make them, but as it is we find ourselves unable to meet all the demands made upon us.

Respectfully yours,

THE BAKER CARRIAGE CO.

Per CHAS. D. HOWELL, Treas. and Mgr.

PONTIAC, Mich., June 14, 1901.

Editor of THE HUB:

Dear Sir—Replying to yours of the 10th inst., would say that we do not think there is any reduction in the output of good work; in fact, we think the demand in even lower grades is for something a trifle better.

Yours truly,

DUNLAP VEHICLE CO.

BLOOMINGTON, Ill., June 17, 1901.

Editor of THE HUB:

Replying to your favor of the 10th inst., we answer the questions in the negative.

Having been in the carriage business for thirty years, we certainly believe there are a much greater number of high-grade vehicles now made than there were a quarter of a century ago. Very truly,

HARBER BROS. CO.

KALAMAZOO, Mich., June 15, 1901.

Editor of THE HUB:

Yours of the 10th regarding number of vehicles used at the present time compared with twenty-five years ago received. We had not given this matter thought, but should say that there are a third more

goods jobs and ten times as many medium-priced or cheap vehicles used to-day than there were twenty-five years ago, in proportion to the population.

Yours truly,

LULL & SKINNER CO.

KALAMAZOO, Mich., June 15, 1901.

Editor of THE HUB:

Dear Sir—Yours of June 10th at hand. In answer will say that fine carriage building is on the increase. Twenty-five years ago there were possibly twenty builders of what we call fine carriages in Michigan, and they would possibly average twenty-five fine jobs each year. This would make five hundred carriages of what we would call fine work. The Michigan Buggy Co. turn out between 15,000 and 20,000 vehicles annually, about 4,000 of which are strictly fine A grade work, that will average finer than the 500 fine carriages that were made in Michigan twenty-five years ago, and eight times as many as the whole State produced at that time; and there are many other factories in Michigan making fine work and lots of it; the same is true in the State of New York. I will venture to say that the H. H. Babcock Buggy Co., H. A. Moyer, the Cortland Wagon Co., and W. N. Brockway & Son turn out more fine work every year than was built by the whole State of New York twenty-five years ago, and there are hundreds of other smaller manufacturers in that State. The same is true of Ohio. The Columbus Buggy Co., the Buckeye Co., L. & M. Woodhull, and the Kaufman Buggy Co.; these four concerns turn out twice as much fine work as was built by all the manufacturers of fine carriages in the State of Ohio twenty-five years ago.

Yours very truly,

Per M. H. LANE, President.

MICHIGAN BUGGY CO.

INDIANAPOLIS, Ind., June 13, 1901.

Editor of THE HUB:

Dear Sir—Replying to your valued favor of the 10th, the person who wrote the article respecting the decline in fine quality and high-grade carriages in the United States certainly must have been out of touch with the facts for quite a number of years. The real truth is entirely the reverse, as the production of fine carriages of all sorts has very much increased in the United States, and, as the statistics of the United States exports will show, they gradually increase from year to year to such an extent that there is absolutely no comparison in the figures to-day and twenty years ago. Not only do we export more fine carriages, but the consumption of fine carriages throughout the United States has increased most wonderfully.

The mere fact that the American makers had no great exhibition of their wares at the different international expositions tells no story other than the fact that the majority of the American manufacturers were entirely too busy and the demands on them too great to admit of them taking the time to make shows of their wares at these places.

Very respectfully yours,

D. M. PARRY.

WAYNE, Mich., June 13, 1901.

Editor of THE HUB:

Dear Sir—We have your favor of the 10th. Our idea on the subject would be this: That the use of vehicles is much greater than in former years and that the material used in what is known in the "B" grade work is so much better than it used to be that it has made a demand for this class of work, and of course the demand for this class of work is far in excess of the higher grade of work, and therefore the people have an idea that the trade in the better class of work is falling off. The "B" grade work to-day is of such a high quality, both in workmanship and finish, that it does not pay a person to buy a higher priced vehicle, and the price is so low that it enables a great many people to have vehicles who in former years were obliged to do without them. These ideas are simply ours from observation. We have kept in close touch with the trade.

Respectfully yours,

PROUTY & GLASS CCGE. CO.

RACINE, Wis., June 13, 1901.

Editor of THE HUB:

Dear Sir—Referring to your letter of the 10th inst. If by high-grade vehicles you mean such as are produced by the small shops in a limited way, say one to three hundred jobs per annum, and that sell at retail from \$350 to \$500, then we do not know that the answer to your question can be reduced to a fact. But if you mean such work as is accepted as "A" grade by well-informed builders in comparison with the so-called cheap and middle grade goods, we think you may put your question beyond dispute by showing a list of such factories and their output for comparative years. As a matter of opinion, we believe that the output of the high "A" grade and middle grade have all increased within the last twenty-five years and that the growth of the old and the building up of new factories indicate this. Yours very truly,

RACINE WAGON & CARRIAGE CO.

CHICAGO, June 13, 1901.

Editor of THE HUB:

Dear Sir—In reply to your favor of the 10th inst., we do not feel qualified to answer except as the matter relates to our own business, in which case we can only say there has been an almost constant increase in our production and sale of carriages. We aim to build the finest carriages exclusively, and we are certainly building more fine carriages at the present time than ever before.

Yours very truly,

C. STONE & SONS.



Editor of THE HUB:

ST. LOUIS, June 13, 1901.

Dear Sir—We are in receipt of yours of 10th regarding the production of carriages of high grade. When the article appeared we read it with surprise, as although there has been great increase in the manufacture of the lower grades of light pleasure vehicles, and with us a decrease in the numbers of finer grades of top buggies produced. Other styles of vehicles for two passengers have taken the place of that particular design of vehicle, are produced in increasing numbers annually, and the production of fine heavy carriages is immeasurably increased over a quarter of a century since. We speak of St. Louis, and believe that this holds good for all the larger cities of the Central and Western States. We note a decided increase yearly in light family vehicles for warm weather use, of which the larger portion is of high grade, while, as we said above, the increase in the West of high grade close work for winter use has been very great during the past twenty-five years. In St. Louis we should approximate the increased production of light high grade vehicles of 1900 as compared with 1875 as 200 per cent., and of heavy pleasure vehicles of the same years as 400 per cent.

In our opinion fairs and expositions are not criterions as to numbers of vehicles displayed, of the number of same produced. We think the *Monthly* has been rather hasty in accepting the statement of their correspondent, and believe that if investigation had been made, it would have been repudiated; at any rate, we know that it does not apply to this section of the United States.

Yours respectfully, J. P. WRIGHT.  
JAMES A. WRIGHT & SONS CARRIAGE CO.

DETROIT, Mich., June 13, 1901.

Editor of THE HUB:

Dear Sir—Your letter of the 10th inst. to hand. Our business, as you know, is now, and has been for more than thirty years, the manufacture of high-grade carriages and carriage bodies. In this connection we are brought into contact with the builders of fine carriages throughout the country. We are in position to know that the writer thereof is in error. About four years ago the statement would have had some foundation in fact, owing to unparalleled depression in the carriage industry, especially in the production of fine carriages, for the very good reason that very few people had the money to put into fine vehicles, and they bought low-grade carriages instead. But just as soon as money came into circulation again, the trade in fine carriages assumed mammoth proportions, and to-day there are easily twice as many really fine light and heavy carriages being built in this country as at any time in the past twenty-five years. They are not in all cases, being made by the same people, and there is where the trouble is with the writer of the article referred to. Very truly,

C. R. WILSON.

SOUTH BEND, Ind., June 15, 1901.

Editor of THE HUB:

Dear Sir—Your letter of the 10th instant is received and noted. We have also read the article that you enclose, and in reply beg to say that from the present condition of our factory, and this condition has been prevalent with us a long time, every indication proves that the use and demand of high-grade work has increased largely. Every department of our business is running full and we could put on three hundred additional skilled mechanics in the various departments if we could get them. Very cordially yours,

C. A. CARLISLE,  
Purchasing Agent for Studebaker Bros. Mfg. Co.

MOBILE, Ill., June 12, 1901.

Editor of THE HUB:

Dear Sir—Being builders of light work we don't know where the number of heavy carriages stand, but believe there are more two-horse turnouts in proportion to population to-day than in 1876, and do not think there has been any degenerating in quality in the lot. In lighter work, we believe the standard is higher than in centennial times; that the cheapest buggy of to-day is better than the cheapest buggy of the past date, and that the quantity of higher grade work in lighter lines has increased. Briefly, prices have declined, and the standard of quality has advanced all along the line. Probably the output has diminished at some of the old carriage making centres, but has developed at many points farther West and South. Perhaps some of our journalistic friends still think that the Alleghany Mountains are the western boundary of the good carriage product.

Yours truly, D. M. SECHLER CARRIAGE CO.,  
Per T. M. Sechler, V. Pt.

PONTIAC, Mich., June 13, 1901.

Editor of THE HUB:

Dear Sir—We are in receipt of yours of the 10th inst. We cannot agree with the writer of the article which you mention, as we believe there has been an increase in the number of high-grade vehicles built, although not nearly as much as in the cheaper or medium grade. There may be some truth in the statement, however, if it is considered that high-grade vehicles are only those such as are made to order or in small shops, but as many of the factories build vehicles which can be justly called high grade, we do not consider that there has been any decrease, and in fact that there has been an increase in the output of this class of goods. This is especially true of the last three or four years.

Truly yours,  
R. D. SCOTT & CO.

THESE SAY A DECREASE.

LOCKPORT, N. Y., June 14, 1901.

Editor of THE HUB:

Dear Sir—Replying to your favor of June 10th, asking for my opinion regarding the condition of trade for the sale of fine carriages of high grade and workmanship, I regret very much that I am compelled to report that my business, which is confined to a radius of forty miles, has fallen off within the last ten years fully one-half in the sale of our high-grade carriages. I have been compelled in order to keep my men employed to build what we term a cheap buggy, which we retail with rubber top at \$80.00, and with a leather top at \$90.00. Manufacturing these buggies, which have found considerable sale, has kept us together as a factory, so that with the decreasing trade of high-grade work we have still been enabled to do business. I attribute it largely to the small profits of the people doing business in the city, and with the extreme hard times prevailing in the surrounding farming community. I hear this remark from our customers and friends continually: "Well, Bronson, I would be glad to buy your own work, but the times are so hard and I am making so little money that I cannot afford to do it." I am confident that the scarcity of money in the hands of our customers is largely the cause of the slow sale of high-grade work. The suburban street car line and the city street car line also affect to a considerable degree the sale of our carriages. Within the last year I have noticed a slight improvement in the local condition of the carriage trade, and I am confident that there will still be improvement in the way of larger sale, but probably with small profits.

Yours truly,  
I. A. BRONSON.

MANCHESTER, N. H., June 14, 1901.

Editor of THE HUB:

Dear Sir—Replying to your letter of the 10th inst. we are sorry to say that we think the facts are in the main, as stated in the article mentioned, although of course we dislike to acknowledge it. All over New England, at least, you will find shops that twenty or twenty-five years ago built fine, first-class work, which then sold at good prices, which now are doing a repairing business only, or else are closed entirely.

Yours etc.,  
J. B. MCCRILLIS & SON.

## TWENTY-NINTH ANNUAL CONVENTION—OFFICIAL NOTICE TO THE MEMBERS OF THE CARRIAGE BUILDERS' NATIONAL ASSOCIATION OF THE UNITED STATES.

OFFICE OF THE SECRETARY, WILMINGTON, DEL., June 1, 1901.

THE Twenty-ninth Annual Meeting of this Association will be held in Cincinnati, Ohio, during the week commencing October 20, 1901.

At the same time and place the Annual Exhibition of Parts of Vehicles, Automobiles, Models, New Inventions, Harness, Horse Equipments and Materials pertaining to the carriage, wagon, automobile and accessory industries will be held.

For exhibition purposes, the Executive Committee have engaged Machinery Section of the Music Hall, containing 27,000 square feet of floor space, giving ample room for the purpose intended. Every exhibitor will be assured of a good location, and have ample room to show his goods.

The following rules and regulations have been adopted to govern the Exhibition:

Exhibitors must be either active or associate members of the Association.

The exhibits must be confined to models, parts of vehicles or automobiles, and to materials used in the construction of the same, or to coachmen's outfits, harness and horse furnishings. No finished vehicle will be admitted.

On account of the manner in which the space is sold—by mail only—it is impossible for us to make a diagram of the Hall, and allow each one to choose his own location when making application for space. You can readily see, several might choose the same location, and by this lead to endless trouble.

Therefore, no definite location can be allotted to any exhibitor on receipt of application. The space will be allotted in the order applications are received, and arrangements can be made on the opening of the Exhibition to group industries that desire to be so arranged. Those making early application to the secretary will secure what advantage in location there may be, and also avoid the delay in securing their space on the day of opening. Ample room, however, will be furnished to all.

Each exhibitor will be expected to arrange and care for his own exhibit, and the committee assumes no responsibility whatever.

Exhibits can be placed in position on Friday, October 18th, and Saturday, October 19th, and must be removed on Monday, October 28th, thus affording six full days for business.



The Exhibit Hall will be open continuously from 8 o'clock a. m. until 6 o'clock P. M. during the week, and if possible to so arrange, the hall will be kept open on Tuesday night, October 22d, and on Wednesday night, October 23d, until 9 o'clock p. m., so as to allow time for those employed during the day to visit the exhibition in the evening.

The space for the exhibits will be marked off into 4, 8 and 12 feet wide sections, and running continuously from aisle to aisle, longitudinally of the space, with aisles on either side and at the ends of the parallelogram so formed. This space will be sold in multiples of four feet, according to the following scale of prices:

|                           |         |
|---------------------------|---------|
| 4 x 4 feet—16 feet.....   | \$ 5.00 |
| 4 x 8 feet—32 feet.....   | 10.00   |
| 4 x 12 feet—48 feet.....  | 15.00   |
| 8 x 8 feet—64 feet.....   | 20.00   |
| 8 x 12 feet—96 feet.....  | 30.00   |
| 8 x 16 feet—128 feet..... | 40.00   |
| 8 x 20 feet—160 feet..... | 50.00   |
| 8 x 24 feet—192 feet..... | 60.00   |
| 8 x 28 feet—224 feet..... | 70.00   |
| 8 x 32 feet—256 feet..... | 80.00   |
| 8 x 38 feet—304 feet..... | 90.00   |
| 8 x 42 feet—336 feet..... | 100.00  |
| 8 x 46 feet—368 feet..... | 110.00  |
| 8 x 50 feet—400 feet..... | 120.00  |

Larger space in the same proportion. Floor space only will be sold. This may be arranged by the exhibitor with desk, chairs, tables, railing, etc., to suit his needs, but the committee does not agree or undertake to supply any of these articles.

Space about the sides of the Hall of Exhibits will be devoted, as far as possible, to exhibitors requiring wall space for standing, hanging, paneling or displaying in booths. No exhibits of this character will be assigned space in any part of the hall that will interfere with the general level of floor or table exhibits.

No signs in the body of the hall shall extend upward to exceed 7 feet above the level of the floor, excepting those that may be displayed on the walls or on the sides of the hall.

No signs of any description will be allowed that interfere with another exhibitor, deprive him of light or prevent him from showing his goods in a proper manner.

The installation, arrangement and care of exhibits must be done by and at the expense of the exhibitors. The association will supply space, light and heat, and will police the premises in the usual way. No nails, tacks or screws shall be placed or driven into the walls or floors, and all signs and decorations must be put up without defacing the building.

Any damage to the building by any of the exhibitors must be settled for before the exhibits are removed from the building.

The Association assumes no responsibility whatever for care of exhibits, boxes, crates, etc., except as above stated.

Application for space should be made to the secretary NOW, and should state the nature of the exhibit as well as the space required. As far as it is possible, the space will be assigned in order of receipt of application, and the best location, if any, given to those making early application.

Payment for the space taken can be made with the application, or if the exhibitor prefer, can be made at any time prior to October 1, 1901. Receipts for same will be returned by the secretary, and said receipts will be received as voucher, for space, when presented to the superintendent at the hall.

We would suggest that goods sent for the Exhibition should, if possible, be sent by *express, prepaid*, marked in the owner's name. Carriage Builders' National Association Exhibition, Music Hall, Cincinnati, Ohio.

Sending by express may cost a little more than by regular freight, but the shipper would be sure of having his goods delivered at once. For bulky exhibits, too large to send by express, arrangements will be made with a transfer company, when possible, to haul them from the freight stations direct to the hall.

Don't forget to prepay the expressage or freight; this will prevent delay in delivering goods.

The Executive Committee will appoint a "Special Committee on Exhibition," to examine the exhibits and make report to the Convention of such articles as show improvement in their special lines, or show a high order of inventive ability.

By resolution passed at the annual meeting held in New Haven, Conn., October 17, 1883, it is required that any firm or company

wishing to exhibit goods at the Convention should have at least one of its partners or officers a member of the Association; and the fact that a representative or employé is a member will not alone be sufficient.

#### EXTRACTS FROM THE CONSTITUTION.

"The members of this Association shall be persons engaged in the manufacture of carriages or sleighs for pleasure or for freight."

"Associate members may be elected from any trade or profession pertaining to the carriage trade, upon the payment of dues and fees prescribed by the by-laws, which shall entitle them to all the privileges of the Association (including the annual dinner), except a vote."

#### EXTRACTS FROM THE BY-LAWS.

"The initiation fee of active members shall be \$5, and that of associate members, \$10. The annual dues shall be \$5, payable in advance."

Applications for membership should be addressed to Henry C. McLearn, Secretary, Wilmington, Del.

HENRY C. MCLEARN, *Secretary*.

Wilmington, Del.

By order of the Executive Committee of the Carriage Builders' National Association.

## Items of Interest.

### AN ELEGANT SPECIMEN BOOK.

WE are in receipt of a specimen book of carriage engravings issued by the Grand Rapids Engraving Co., of Grand Rapids, Mich. The carriages shown are mostly half-tone reproductions from wash drawings, many of which are from customers' plates. The initial illustration is a break printed in four colors, a superior piece of work. This is followed by a splendid line of half-tone cuts, accompanied by testimonials of the builders, all of whom speak in the highest praise, but none too strongly, we think, as in all our experience with carriage engravings we have not seen a line of illustrations of equal merit, not only as to the general effect, but in matters of detail as well. They also show some very fine half-tone portraits of carriage building, and a very interesting line of interior views of the offices and work rooms, and an exterior view of the plant, the whole being of a character to convince the most skeptical that this company is most thoroughly equipped to produce high-grade carriage illustrations, and to do fine printing, catalogue printing, in black or in colors. Not the least interesting feature is a medallion containing the portraits of, we presume, the three members of the company, which are artistically executed. It is an album worthy a place in the library of those who can appreciate high-class artistical productions.

### LAID THE CORNERSTONE.

THE Initial Toe Pad Co., of Three Rivers, Mich., laid the cornerstone of their new factory on May 22d. This building will be a four-story brick building, 120x48 feet, and will have plumbing, electric lights, steam heat, elevator, and in fact will be one of the best equipped buildings for the making of carriage trimmings in the country. In addition to this main building there will be two smaller buildings for store room, one 50x30, one-story, and another 40x30, two stories.

### FIRE HAS RETARDED BUSINESS.

THE burning of the factory of the Lowell Model Co., manufacturers of gasoline engines, of Lowell, Mass., on April 27th, caused a loss of nearly all of the company's patterns, and prevented the prompt filling of orders. The company are now running their works, but under difficulties, until they can get their patterns completed.

### DON'T FAVOR THE TRIP TO MAMMOTH CAVE.

THE proposed trip to Mammoth Cave, by the members of the C. B. N. A., at the time of the Cincinnati Convention, looks like a pretty long side trip, the distance being over two hundred miles. The *Spokesman* for June published a communication from Maurice A. Doucette, of the Barnett Carriage Co., in which the writer takes exceptions to the project, and gives good reasons for doing so.



*TUDHOPE CARRIAGE CO.*

THE Tudhope Carriage Co., Limited, of Orillia, Canada, have issued a very attractive illustrated catalogue, showing their line of carriages in half-tones. The line is made up of road wagons, the whalebone wagon on wire and wood wheels, square box Corning and other buggies, jump seat carriages, phaetons, surreys, Concords, etc.: also a small catalogue of sleighs. The whole indicates that the company is up-to-date in its styles and varieties.

*STEAM CARRIAGES.*

THE Sterns Steam Carriage Company, of Syracuse, N. Y., have issued a very neat descriptive catalogue of their steam vehicle, in which is given full instructions for the care and operating of these vehicles. The company build business as well as pleasure vehicles. If you are interested in steam carriages, send for one of these catalogues.

*FIRM DISSOLVED.*

E. D. DEGREE, of the firm of Degree & Martin, Hinesburgh, Vt., sold out his interest to C. W. Pierce, and has gone on the road for the Strong Hardware Co., Burlington, Vt., selling their Concord wagons, equipped with Concord axles and sand boxes. Mr. Martin has been in the carriage business for twenty years, and is well up in carriages. The Strong Hardware Co. does not retail carriages.

*STANDARD WHEEL COMPANY.*

THE Standard Wheel Company, of Terre Haute, Ind., have issued an extremely attractive catalogue for January, 1901. It is printed in two colors, and finely illustrated, the cuts showing the regular lines of wheels built, special attention being given to the company's "Concord wheel," for which special claims are made. It also contains a large number of tables giving sizes of wheels and parts, together with prices for all kinds of wheels manufactured by them. These tables, independent of their connection with the products of this house, have a special value to carriage builders. We look upon it as the most complete wheel catalogue that has come to our office.

*JACKSON CUSHION SPRING CO.*

A CUSHION seat spring that is meeting with favor is the "Hook and Eye" Twin Spring. These springs are made of the best steel spring wire, varying the size and height according to the frame they are to be used in, and are made with a hook on the bottom of the spring which hooks onto stiff supporting wires, which lock into the cross wires that are fastened into the top of the frame. This hook is itself a spring, and while it is easily sprung onto the supporting wire, when once on, the maker claims that it is impossible for the spring to get loose; and further, because each pair of springs are made of one piece of wire and thus connected on top (the top cross wire being part of the spring), they make a construction more satisfactory and as stiff as three rows of single springs, and they cannot tip over, get out of place in any way, or sag in the center. There are no knots to wear through the drill. No matter where you sit on the seat you must get the benefit of the back as well as the front rows of springs.

*GIVE HONOR WHERE IT IS DUE.*

MENTION has previously been made of the report of Lord Roberts in connection with American wagons, but the names of the builders of the special wagons were omitted.

Under date of April 2, 1901, Lord Roberts, in his official report of the progress of the war in South Africa, said:

"Wagons were imported for trial from the United States, and these proved to be superior to any other make of either Cape or English manufacture. The wheels were of hickory and the metal work of steel. They were built by Messrs. Studebaker Bros. Manufacturing Company, who have a great wagon manufactory at South Bend, Ind. The superiority of these vehicles was doubtless due to the fact that such wagons are largely used in America for the carriage of goods, as well as for military transport. The manufacturers have, therefore, learned by practical experience what is the best type of

wagon, and what are the most suitable materials to employ in building it. It may be added that the wagons in question cost considerably less than the Bristol pattern wagon."

This report was published in *The Gazette* and *The Times* of London, and then became common property.

Cablegrams flashed across the Atlantic under date of April 16, and on the 17th the great American dailies thus gave prominence to the news under flaming headlines. And with but few exceptions the name Studebaker Bros. Manufacturing Company, of South Bend, Ind., was stricken out by the telegraphic editors of the very papers that should enthusiastically have given prominence to an item of so much importance to all interested in American manufacture.

Great Britain's official organs, printed in London, gave just and proper credit to an American enterprise by publishing in full Lord Roberts' high praise of the Studebaker wagon, but the American dailies, with a few honorable exceptions, eliminated that part of his report. THE HUB having published the report as first given out, takes this opportunity to republish it and give the credit where it belongs, and congratulates the Studebaker Bros. Manufacturing Company on receiving so valuable a testimonial for their well-known wagons.

*BOLT AND NUT CO. INCORPORATED.*

WHITE PLAINS, June 3.—The certificate of incorporation of the Russel, Birdsall & Ward Bolt and Nut Co. was filed on June 3 in the County Clerk's office. The capital stock is \$2,000,000, consisting of \$500,000 of 6 per cent. cumulative preferred stock and \$1,500,000 common stock. The incorporation is for 100 years. The principal office of the company is in Portchester. The directors are Richard H. and Ellwood Birdsall, Samuel Cornley, Walter S. Cornley, William L. Ward, Howard E. Marshall, Samuel N. Le Fevre and Joseph H. Marshall of Portchester and Robert W. Parsons of New York. William Nelson Cromwell holds 1,991 shares of the preferred stock and 15,000 shares of common stock.

*PENNSYLVANIA RUBBER CO.*

THE Pennsylvania Rubber Co., of Erie, Pa., have secured a very large business during the past year with their solid rubber tire, applied with modified sizes of tape or flat band, and parties who have used this tire are universal in their praise of the manner in which it has given results. They have without question proved to the carriage trade that flat band tire, made of good quality of rubber and applied with the right size band, will prove successful in every way. In view of the fact, however, that a certain portion of the trade will not use other than a two-wire tire they have decided to furnish a two-wire tire and have secured a solid tire patent, under date of May, 1900, that shows some very excellent points. Among other things they claim for it is that it will fit any standard channel, and can be put on with standard sizes of wire.

There are, as shown in the cut in this advertisement, grooves molded in the base of the rubber tire longitudinally one under each tire. These grooves are made in a V shape, and when the tire is applied and the wires are drawn tight, ready to braze, the pressure between the wires and the grooves allows them to flatten out, and the rubber is thus forced into the corners of the channel on either side. The lateral compression together with the longitudinal compression fills the channel so completely that there is no possibility of the tire creeping. The widest point of the tire is also changed so as to bring it well down into the channel, and thus gives ample room for the rubber when under load, and prevents its being forced out over the edge of the rim and the consequent fault of rim cutting. They also claim to be making this tire of very high-grade rubber, the most durable that is known to the trade, and that the quality in conjunction with these points of advantage will make the tire a very durable one. There seems to be points of interest in this solid tire that will insure its becoming prominent among the carriage manufacturers.

*CARRIAGE CATALOGUES.*

In the past years the wagon and carriage manufacturers have paid but little attention to their catalogue work. Almost anything that showed the general style of their goods was considered good enough for the trade, but a new era has dawned and the wideawake manufacturer must present his goods in an attractive manner, or his catalogue will find lodging in the waste basket. Catalogue work is a business by itself and time and money can be saved by having the complete work, engraving and printing, handled by one concern. Dickinson Bros., of Grand Rapids, Mich., have established an enviable reputation for furnishing high art catalogues and are always pleased to answer all inquiries.



**Obituary.**

MARTIN GABEL.

MARTIN GABEL, draughtsman and constructor for James Cunningham, Son & Co., carriage and hearse builders of Rochester, N. Y., died after a short illness on June 1 in the forty-fourth year of his age. Mr. Gabel was a designer of rare merit and a most capable superintendent. Mr. Gabel was born in Maenz, Germany, October 24, 1857. He came of an old and respected family, his father being burgomaster of the town and possessed of liberal means. His father died when he was but two years old. He remained in his native town and attended school until he was twelve years of age, when he came to this country and made his home at an uncle's in New York city. He attended school until he reached an age to select a calling. He went to Andes, Delaware County, N. Y., and worked for John Miller, a carriage builder at that place. After a stay of two years with Mr. Miller he returned to New York city and went to work for Brewster & Co., Forty-seventh street and Broadway. Here he worked in the woodshop and applied his hours outside of the factory in the study of drafting. He left Brewster & Co. to take the position of foreman with James Gray & Co., and later on as draughtsman and superintendent. Later he opened an office on his own account, as designer and draftsman. After several changes he



MARTIN GABEL, CARRIAGE DRAUGHTSMAN.

Born October 24, 1857. Died June 1, 1901.

went with James Cunningham, Son & Co., where he remained six years, during the time designing a line of carriages and hearses for the Columbian Exposition at Chicago, every one of which won a prize.

He remained with the James Cunningham, Son & Co. until the fall of 1897, when he accepted a partnership in Columbus with the firm of Meyer & Schlechter. On the dissolution of this firm in the fall of 1899 he again engaged with James Cunningham, Son & Co. His services were rewarded later, on account of his unceasing activity and popularity, where his many years of congenial companionship gained him in the trade, to be the manager of their New York branch of the James Cunningham, Son & Co. He leaves a wife, two sons and a daughter, Arthur, Alexander and Catherine respectively, and a host of relatives and friends to mourn his loss. The services at his last resting place were conducted by the Masonic fraternity, of which he was a member.

WHENEVER you find a man who says that honesty does not pay, it is a sign that he has never tried it.

**Trade News.**

BY UNCLE SAM.

## ALABAMA.

HUNTSVILLE—Smith & Green, one of the leading carriage manufacturing firms in North Alabama, will double their plant this summer. A member of the firm stated that the exact date when work will begin on the doubling of the plant cannot be announced at present, but it is believed that it will be only a short time. The doubling of the plant will cost between \$15,000 and \$20,000.

## CALIFORNIA.

SAN DIEGO—Parrott Carriage Manufacturing Company. Principal place of business, San Diego. Directors: L. L. Parrott, F. A. Terrell, E. J. Louis, F. P. Frary and F. T. Botsford. Capital stock, \$30,000; subscribed, \$25.

## FLORIDA.

JACKSONVILLE—McMurray & Baker, carriage manufacturers and dealers in harness, etc., were burned out in the big fire of 1891, and rose from the ashes of that fire stronger than before. They lost their building and entire stock on Main street in the fire of 1900, and they were again wiped out by the fire of May 3d, and have gone to work for the fourth time to build themselves up even stronger than ever. Before the close of the present year they expect to be again located in permanent quarters with one of the largest lines of goods ever carried by them. They are at present temporarily located near the Union Depot.

F. A. Chapman, carriage manufacturer, whose large factory on Main street was destroyed by the May fire, is now at West Forsyth street, between Bridge and Jefferson, where he is prepared to fill orders in his line. Mr. Chapman will begin on his new building on the corner of Main and Church streets, at an early day. It will be a two-story brick and stone building, 105 feet square, and will be ready for occupancy in September.

## ILLINOIS.

CHICAGO—Garden City Spring Works. Capital stock, \$8,000; incorporators, Arthur W. Hardy, Oliver T. Cody and Walter K. McIntosh.

A carriage and wagon manufactory is being built at Nos. 108-114 Austin avenue, for William Holtze. The building will be three stories, with 70 x 80 feet ground dimensions, of mill construction, with pressed brick front, and will cost \$15,000.

PEORIA—Peoria Buggy Co. Capital stock increased from \$25,000 to \$50,000.

QUINCY—The Knapheide Wagon Works at Sixth and State streets are having an addition built. The new building will be 40 x 50 feet in dimensions and four stories high, and will cost about \$15,000.

## INDIANA.

INDIANAPOLIS—Paul White, of the White Steam Wagon Co., has gone to Europe. He will not return until July 1, when construction will be begun on the new factory on Fifteenth street and the Big Four Railroad.

VINCENNES—The Vincennes Implement and Carriage Co. has been sold to George H. Shepard, who will continue the business.

John T. and Guy A. McJimsey sold their buggy house to Messrs. George W. Donaldson, of this city, and Richard M. Robinson, of Wheatland. This is one of the largest buggy houses in the State. It was founded about sixteen years ago by Messrs. John T. McJimsey and his son, Guy A. McJimsey, who have built it up to its present large and prosperous condition. The change is due to the failing health of the retiring proprietors.

## IOWA.

CLARINDA—R. W. Haskins, of Hepburn, has opened a carriage repository here, where he has a stock of the Baker Carriage Co.'s vehicles. That company is located at Des Moines, and Mr. Haskins' brother, J. G. Haskins, is its president. Both gentlemen formerly lived in Clarinda.

## KENTUCKY.

LONDON—The London Wagon Company has begun work on the building to be used as a factory. From twenty-five to thirty men will be employed.

OWENSBORO—The Owensboro Wagon Co. has declared an additional cash dividend of 8 per cent., making a total cash dividend of 13 per cent. for the year up to the present, besides a 25 per cent. stock dividend. Plans are being considered for an extensive enlargement of the plant.

The Owensboro Wagon Works have filed amended articles of incorporation, increasing the capital stock from \$250,000 to \$300,000.

## MAINE.

ROCKLAND—L. W. Benner has reopened his carriage shop at the North End.



MASSACHUSETTS.

**BROCKTON**—The Boston Roller Chafe Iron Co. is a new organization that has opened for business at 570 Main street, this city. The company was organized May 1 to manufacture and sell carriages to the dealer and carriage accessories to the jobbing trade generally. The company will devote particular attention to the manufacture and sale of a new roller chafe iron, the patent for which was issued to A. Parker Smith, Jr., of this city, August 21, 1900. Mr. Smith is president and general manager of the new company, and H. S. Clark is secretary and treasurer.

**PITTSFIELD**—M. J. Madden, the carriage-maker, has moved his carriage shop from Columbus avenue to Church street in the building with Frank E. Easland of the Church Street Carriage Co.

**ROWLEY**—Kenty, of Georgetown, has leased the paint shop on Central street, and has set up a carriage painting establishment, where he is prepared to do first-class work.

MICHIGAN.

**JACKSON**—The Granger-Hayden Co. succeeds the Collen-Becker Carriage Manufacturing Co.

**SAGINAW**—Fire started in the tire heating room of the Handy Wagon Works at the south end of the city on May 12th. The fire was located near the engine and boiler room and was confined to that room and one above filled with hardwood lumber, the building being detached from the main factory. The loss approximates \$3,000 and is fully insured.

**THREE RIVERS**—The Three Rivers Carriage Works and Toe Pad Co. will rebuild in Three Rivers.

MINNESOTA.

**WINONA**—The carriage and wagon factory of Kaiser & Dohm, which has been operated only in a small way for several years, has been sold to W. F. Brehmer of this city, and he will take possession of it at once. The work of manufacturing wagons, carriages, sleighs and cutters will begin at once, and the business will be built up as rapidly as possible. As soon as Mr. Brehmer has the business well in hand he will have the plant entirely remodeled and enlarged.

MISSOURI.

**ST. LOUIS**—The Moran & O'Toole Carriage and Wagon Co., 413 Spruce street, built for the Mengel Box Co. the largest stake wagon ever made in any country or by any maker. It is declared by transfer men to be by far the largest wagon they had ever seen or heard of. The wagon is made to carry tobacco boxes and will carry 3,000 of them. It has 64 stakes, weighing 12 pounds each, 9 feet 6 inches in length. The dimensions of the wagon are 22 ft. by 8 ft. 4 in. It weighs 6,000 pounds and has a carrying capacity of 15,000 pounds, and yet two horses are all that is necessary to pull it, because it has roller bearing axles, which makes it run with wonderful ease. It has a brake and all the latest improvements. The color is orange and the stakes and pole are natural wood.

NEW HAMPSHIRE.

**MANCHESTER**—John W. Wilson has been granted a patent on a swing seat for vehicles.

**CANAAN**—Jackman & Dickey is the name of a new firm which have started business in the Green shop in Canaan. They manufacture lumber wagons, and do all kinds of repairing, horse shoeing, etc.

NORTH CAROLINA.

**GREENSBORO**—The Carolina Spoke and Bending Co. of Greensboro was incorporated June 9th with \$100,000 capital. The incorporators are J. Elwood Cox, J. G. Forshee, J. H. Whitt, G. A. Smith, C. P. Sellers and J. E. Logan.

**WILSON**—The buggy works of Hackney Bros.' plant is one of the most complete and up-to-date shops in the South. They have recently put in the blacksmith shop a new improved blower; it does away with the wheel and fan. The blacksmith by simply moving a small iron lever turns on as much or as little draft as he wants. Over each forge is a large flat funnel, which can be raised or lowered at will. Through this funnel escapes the smoke and cinders into a large sheet iron pipe. The output of these shops is about sixty jobs a week and it is first-class work.

**SMITHFIELD**—The Holt Hardware & Buggy Co., of Smithfield, has been incorporated by the Secretary of State. Its capital stock is \$10,000 to \$20,000, and E. J. Hall, H. D. Ellington, T. R. Crocker and S. S. Holt are the incorporators. The business proposed is the conducting of a general store, but more particularly the buying and selling of hardware and the manufacture and repair of vehicles and machines. The company organized by election of E. J. Holt as president and Thos. R. Crocker as secretary and treasurer. Mr. Crocker was at one time professor in Turlington Institute, and has been North some years in business. It is a strong corporation.

NEW YORK.

**AMENIA**—Mr. Peter Scutt has opened a wagon-making shop here.

**BATAVIA**—Although the dull season for wheels is practically at hand business is still lively in all departments with the Batavia Carriage Wheel Company, and the Batavia Rubber Tire Com-

pany. Both concerns have enjoyed a busy and prosperous season, and the prospects for future business are all that could be desired. The Wheel Company's export business is steadily increasing, and not a week has passed without good orders from abroad. The Tire Company also has much business with European countries. One order was received from London for nearly 4,000 pounds of rubber.

**MONTROSE**—B. L. White and Frank Strange will conduct a general wagon-making and blacksmithing business. They have rented the shop in the rear of Read's store for their new venture.

**NEW YORK CITY**—Ficke & Clark, Incorporated, of New York City, to manufacture wagons and other vehicles; capital, \$2,000. Directors, William Ficke, John Clark, and G. T. Clark, of New York City.

In the carriage line business is brisk, and J. B. Brewster & Co. are doing a greater business than ever, selling traps of all kinds.

A. A. Woodruff, of Woodruff & De Hart, reports that the demand for Crawford runabouts, Callahan speeders, and McMurray sulkies is on the increase, and that more wagons of this type will be seen on the speedway at Elkwood Park this season and other well-known driveways than ever before.

Flandrau & Co. report an unusual demand for light summer traps, and some of the vehicles turned out by them are very attractive and excite comment in the Park. A number of cabriolets, victorias, and spider phaetons built by Flandrau will be seen this year at the horse shows.

**PETERSBURGH**—William L. Odell has entered into partnership with G. Z. Scrivens in the blacksmith and wagon business.

**RIVERHEAD**—William F. Morrell, of Cutchogue, who recently purchased Mr. Blydenburgh's carriage business in Riverhead, has moved here.

**SYRACUSE**—Plans are being prepared for a large addition to the factory of the McKinnon Dash Works, located in Wallace street, at the junction of Noxon street. The building will occupy a part of the vacant property between the present factory building and Belden avenue, and will be 40x50 feet in dimensions and two stories high. It will be of mill construction, the materials used being brick and wood. The work will be started in the course of two or three weeks, and rushed to completion as quickly as possible, when the business will be practically doubled. The company manufactures carriage dashes and fenders, and has factories at Buffalo, Troy and Cincinnati, Ohio.

OHIO.

**TOLEDO**—Charles R. Fischer and Henry F. Daiber, in a petition filed June 16, ask the Common Pleas Court to dissolve the Tubular Axle Company. The petition sets up that a receiver was appointed for the company in an action brought by Charles F. Milburn, that the property of the company was sold in 1899, and that after all debts were paid there was and still is a fund of nearly \$5,000 on deposit with the county clerk. The two petitioners ask to have this fund distributed among the various stockholders, saying that since the receiver's sale the business of the corporation has been abandoned. Fischer and Daiber own more than one-third of the stock. The company has been engaged in the manufacture of axles and like materials for vehicles. It was capitalized at \$125,000, comprising 2,500 shares of stock at \$50 each, but of this only 1,500 shares were issued.

**UNIONOPOLIS**—The firm of Logan, Naus & Company, of Unionopolis, grain and buggy dealers, warehouse and mill, has been dissolved by order of the court, and S. W. McFarland, president of the People's National Bank, of this city, appointed receiver. Their financial affairs are in bad shape.

The carriage top manufactory of Buob & Scheu, at 408-10-12 East Court street, was totally destroyed by fire May 21st, causing a loss of \$35,000, upon which there is a full insurance. The fire started in the cellar at the southeast corner of the building, under the office and near the sidewalk grating. It flamed up suddenly, and when discovered by two boys in the shop it had a good start and was beyond the control of a bucket brigade that was hastily organized. The alarm was then given to the thirteen girls and thirty men who were at work on the upper floors, and all had to fly for their lives. Loss covered by insurance.

MORSE ROLLER BEARINGS.

THE Bantam Manufacturing Company, of Bantam, Litchfield County, Conn., whose advertisement appears in this month's HUB, offer to the trade a roller bearing for which they claim special merit. A full description of this new bearing will appear in next month's HUB.

NEW BALL BEARING INDUSTRY.

IMPROVEMENTS in vehicular construction are a feature of the new century. Coming on top of Mr. Edison's perfected storage battery comes the announcement of some wonderful ball bearings produced by a German firm and the formation of an American branch concern to supply this continent. The firm style of the American company is The German Secret Process Steel Ball Company. The prospectus



of the new company will be found in our advertising columns this month.

The parent company is the largest steel ball and ball bearing company in the world. It manufactures more steel balls than all the steel ball companies in America combined. London alone buys 2,000,000 steel balls from it every week, and its total production every year is 750,000,000 steel balls. Within the past ten years it has paid out in dividends nearly \$2,000,000, and has paid for its entire plant out of its profits and has no debts. The steel balls and bearings of this company, like those of its great German partner, are available for use in innumerable articles, including drags, drays, wagons, automobiles and

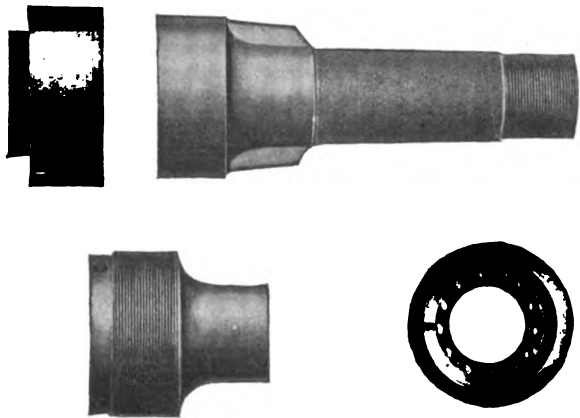


FIG. 1.

vehicles of all kinds, and on steam engines, locomotives and machinery of all and every description. The balls are round to the 1/10,000th part of an inch and are treated by a "secret process" which makes them practically indestructible. They have been subjected to the severest tests on numerous occasions. Locomotives of from 70 to 80 tons have repeatedly rolled over 1/4-inch balls, impressing them into steel rails, or the steel rims of the wheels of the locomotives without any injury whatever. After such a severe test four of these small balls were placed between two pieces of the very hardest tool steel and pounded by a five-ton triphammer at the S. S. White Dental Works, Princes Bay, S. I., indenting the steel and breaking one of the pieces without harming the balls. A similar test was made with three other balls, hammered with a fifteen-ton hammer, driving and

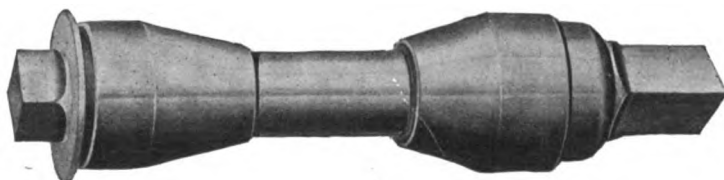


FIG. 2.

fastening them in the softer steel and indenting and breaking the tempered tool steel. Fig. 1 shows the details of a ball-bearing axle attachment for use in converting a heavy truck or wagon. The axletree shaft (Fig. 2) is the same as at present in general use. All that is required is to ream out the hub of the wheel so as to receive the cast-iron core which fits on to the axletree shaft, secured in its place in the hub by the shoulder, and the whole kept in position by the screw nut. All that is required to be done to the axle shaft is to cut a thread for the reception of the nut. The simplicity of the application will be readily perceived, and when it is understood that a truck can be drawn with one-third less power, that is, carry as much of a load with two horses as it formerly did with three, or travel one-third faster, and that without any lubrication, it cannot be long before it comes into general use.

#### EXPIRED PATENTS.

THE following list of patents, trade-marks and designs of interest to our patrons are furnished by Davis & Davis, solicitors of American and foreign patents, Washington, D. C., and St. Paul Building, New York City. A copy of any of these may be had for 10 cents by sending to the above firm.

PATENTS EXPIRED APRIL 29, 1901.

297,685—Fifth Wheel for Wagons—James T. Dougine, Chicago, Ill.

297,689—Wagon Brake—James H. Hedgcock, Bradford, Tenn.

297,714—Vehicle—Jacob Price, San Leandro, Cal.

297,734—Whiffletree—James Whitcomb, San Jose, Cal.

297,745—Wagon Tongue Support—Jacob Bower, Lafayette, Ind.

## Wants.

Help and situations wanted advertisements, one cent a word; all other advertisements in this department, 5 cents a word. Initials and figures count as words. Minimum price, 30 cents for each advertisement.

#### SITUATIONS WANTED.

Would like a position as foreman, or contract of trimming department. Twenty-three years' experience. Thoroughly familiar with all branches of either medium or first class work. Address "A. G., BOX 70," care THE HUB.

Wanted—Position as foreman or superintendent, by a man 35 years old, of 15 years' experience in carriage business. Can furnish best of references. Address "BOX 67," care THE HUB.

As foreman of paint shop in carriage factory. Have had over 30 years' experience at my trade; know all its branches. Thoroughly posted on mixing colors, and on all other materials used in the business. Have had full charge of shop for over 20 years; ran one large shop over 15 years. Best of references. Competent in handling men. Address "X. Y. Z.," care THE HUB.

Position wanted by a first-class carriage designer and practical constructor, who is also mechanical draftsman, having had several years' experience on machinery on motor carriages. I am a practical mechanic and artistic designer, and have had several years' experience with some first-class carriage builders. Am familiar with both light and heavy work. A position with a large firm preferred, where the services of a first-class man would be appreciated. Address, "BOX 61," care of THE HUB.

#### HELP WANTED.

Wanted—Carriage body maker. Job steady and permanent. J. V. & C. RANDALL, Newtown, Pa.

We would like to have a traveling man who would cover the East and West to carry our goods as a side line. For full particulars, address "MANUFACTURER, BOX 68," care THE HUB.

Wanted—To correspond with view of employing first-class painter and trimmer foremen to take charge of their departments in factory building 10,000 cheap and medium grade buggies. Good salary paid. Good references required. Address "SPENCER," care THE HUB.

Wanted—Experienced and active man capable of taking charge of stock books, and handling orders from receipt to shipment in large factory employing no superintendent. Address with references, "WARRICK," care THE HUB.

We need the services of several first-class men calling on the carriage trade and automobile builders, to introduce our line of wire wheels, axles, tubular automobile running gears and carriage parts. Address "N.," Box 66, care THE HUB.

Wanted—To open negotiations with competent men to take charge of painting, trimming and wood departments in factory building; 3,500 medium grade jobs. Address "W. H. M.," care THE HUB.

Wanted—Hustlers to secure new subscribers for THE HUB. A good chance to make money easily. Subscription price, \$2.00 a year. Liberal commission paid. Address Subscription Department, THE HUB, 24-26 Murray street, New York.

Wanted—A salesman to sell carriage hardware to Western trade; one acquainted with buyers for wholesale builders and dealers in carriage material. One who has sold a full line of carriage material preferred. Address in confidence, stating age, experience and salary expected, "EASTERN MANUFACTURER," care THE HUB.

#### BUSINESS WANTED.

Wanted—To rent a carriage shop in some live town for repairing and new work. Will take partner. Address "S. H. E.," care THE HUB.

Wanted—To correspond with party in carriage business for repair work and repository. Address "K. A. B.," care THE HUB.

Wanted—To take interest in carriage factory where a competent man is desired as superintendent. Address "COMPETENT, BOX 69," care THE HUB.

#### PATENTS.

PATENTS—H. W. T. Jenner, patent attorney and mechanical expert, 608 F street, Washington, D. C. Established 1883. I make an examination free of charge, and report if a patent can be had and exactly how much it will cost. Send for circular.

#### FOR SALE.

Solid rubber tire patent. Entirely new principle. Cannot get off the rim. Economical. Experienced tire men say it is the best they have ever seen. For particulars, address "RUBBER TIRE," care of THE HUB.



## COLOR SECRETS.

No. 42.—Grit.

The thing that is needed everywhere else; but the thing that is dreaded in colors. The thing most difficult to give, where it is wanted; and the thing most difficult to get rid of, where it is not wanted. The thing which irritates business ideas like an all-powerful tonic; but whose irritation on the surface of polished wood is an intolerable nuisance. The thing, in a character, which makes up for talent, and pieces out ability, and lifts the mediocre to an equality with genius; but the thing, in a color, which destroys value, and nullifies expense, and drags down a costly product to the level of the common. The thing, for lack of which all other virtues leave men well-nigh useless; but the thing for which all virtues are well-nigh useless, in color.

We try to keep it in the right place—like the boil on the hired man—i. e. in our determination that it shall not appear in the goods we advertise. To this end we spare no money and miss no caution. We provide the best materials and the most perfect machinery and the utmost skill. We go on the principle that we can do our work as carefully as you can do yours. Your finishing shall not be finer than our finish. We'll give you the color, and the varnish, for your utmost elegance of display. We'll not make a price to stagger you, either. Exactly the right thing generally costs a little more; but you may be surprised to learn how little more. Then, you know, there is a very choice pleasure in having exactly the right thing. Why not have the pleasure?

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# SUPERIOR STRENGTH



## PHINEAS JONES & CO

NEWARK, NEW JERSEY.



## AN EXCELLENT INVESTMENT!

# THE German Secret Process Steel Ball Company

("Deutsche Guss-Stahl Kugel Fabrik Actien Gesellschaft")

**CAPITAL, \$1,000,000**

Divided into 6,000 shares of common stock and 4,000 shares of 5 per cent. preference stock, in shares of \$100.00 each.

### BOARD OF DIRECTORS.

MR. PETER MILNE, C.E., A.A.S.C.E. (Chairman).

HERR WILHELM HOPFLINGER, M.E., Founder of the Guss-Stahl Kugel Fabrik Actien Gesellschaft, Schweinfurth, Germany (Chief Engineer).

MR. BYRON A. BEAL, Equitable Life Assurance Society, New York (Treasurer).

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BANKERS, Atlantic Trust Company, New York.

MR. E. R. GRANT, Treasurer Consolidated Exchange, New York City.

HON. W. P. SNYDER, former Special Assistant Attorney-General U. S. A.

JAMES VIRDIN, Recorder of Deeds, Dover, Delaware.

MR. JOHN O'NEILL, Merchant, London, England.

MR. E. D. ACKERMAN, New York City.

MR. STEPHEN H. B. JACOBS (Secretary).

### PROSPECTUS.

This Company is organized under the laws of the State of Delaware as the American Company representing the parent German Company of the same name, and \$320,000 of its share capital is held by the said parent concern.

**General Purpose:** This Company has for its purpose the manufacture of Steel Balls, Cups and Cones, and fittings for Ball-Bearings as applied to numerous purposes. It will operate all the secret processes and patents of the parent company and have sole right to supply the American Market.

The Steel Balls and Ball-Bearings manufactured under these processes and patents are recognized as the only perfect Steel Balls and Bearings available for general use in Bicycles, Automobiles, Heavy Vehicles, Railway Cars, Engines and all kinds of heavy machinery. They are practically indestructible. Placed between two pieces of hardened tool steel and submitted to enormous pressure, by strokes of a steam hammer, they penetrate the steel without suffering any damage. No other concern in the world is able to produce satisfactory Balls and Ball-Bearings, available for heavy bearings, or that will endure for any length of time, and the market is practically unlimited.

**Prospects:** The parent Company was organized ten years ago on a small capital, and has, during the period of its existence, extended its works until it has become one of the richest and best-known concerns of Europe, and in addition to paying for the enormous outlay necessary for buildings and machinery in the extension of its business, it has paid in dividends nearly \$2,000,000, all out of profits.

The prospects of the American Company are even more favorable, as the market has already been established by enormous imports in face of the 45 per cent. customs tariff, and the manufacture of the Company's products in the United States will be made with the advantage of capital adequate to the immense demand already existing, which is but a beginning of the business to be done.

**Remarkable Advantages:** The uses to which the hard Steel Balls and Ball-Bearings may be applied are without number, and several important patents in the designs of such Bearings are the property of the Company, enabling the principle of the Ball-Bearing to be applied readily to existing vehicles, tools and machinery, and the saving of power is enormous. A railway car that requires 193 lbs. pressure to start it with the ordinary journals is started with a power of 112 lbs. pressure when mounted on these Ball-Bearings, and all vehicles and all machinery that have the principle of the Ball-Bearing applied to them have the same advantage. In addition to this the Ball-Bearing requires no lubrication, the use of oils and waste being entirely dispensed with, and the journals themselves lasting much longer. What is known as a "hot box" or a "hot journal" becomes an impossibility. It will be seen by this that a locomotive would be able to draw 50 per cent. more cars when such cars are equipped with Ball-Bearings over the number possible where the old journals are used, with immense saving of oil and waste.

The same principle applies to freight trucks used for street traffic. Two horses can do the work of three if a wagon be equipped with the Ball-Bearing Attachment, which can be applied to existing axletrees at a nominal cost.

Speed is always a desideratum, and the use of the Ball-Bearings is an absolute necessity in reaching the highest excellence in this respect, whether it be on a typewriter, a bicycle or a railway train.

Perfect Ball-Bearing is the only true bearing now recognized by mechanical science, and is rapidly coming into use for all classes of machinery.

Mr. Hopflinger, the founder of the Parent Company, is personally engaged in organizing the plant of the American Company, embracing the construction of machines and machinery sufficient to produce 2,000,000 Steel Balls per week, and a commensurate amount of Ball-Bearings, and the erection of what is destined to be the Model Steel Ball Plant of the World.

**The capital stock is extremely small, considering the profitable character of the business and its scope, and it is confidently expected that very large dividends will be available from the first, and that the shares will become extremely valuable in the near future.**

*In addition to the dividends that will be available from the operation of this Company as the Parent Company for America, it has been decided to form Branch Companies to handle this Company's product, and three-fifths of the stock of such companies will be distributed to the holders of stock in this Company pro rata without further charge or cost to them.*

**One thousand shares of the common stock are now offered to the public at par, the balance having been taken up by the Directors and their friends.**

Stock is payable 10 per cent. on application, 40 per cent. in 30 days and the balance in 60 days.

Forms of application for stock may be had of THE ATLANTIC TRUST CO., Wall Street, corner William Street, New York City, to whom all remittances should be made.

## The German Secret Process Steel Ball Company.



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BURR WHEEL CO.

CAMPBELL AND PARK AVENUES,

... CHICAGO, ILL.



PATENTED JAN. 25, 1888.

## Advantages

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## BURR WHEEL

- Large Hub, suitable for any kind of Axle.
- Long and Heavy tenons on spokes.
- Long shoulders on spokes.
- A flanged wheel with staggered spokes.
- A rivet on each side of every spoke; none passing through the spokes, using twice the number of rivets used in other makes of wheels.
- A light wheel, both in weight and appearance.
- A wheel that will stay in dish.
- A wheel that will stand in the hub.
- Easy to repair. Three times stronger at the hub than any other wheel made.



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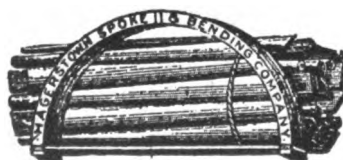
S. A. MUNN, Treas.

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The Hagerstown Spoke & Bending Co. Hagerstown, Maryland,  
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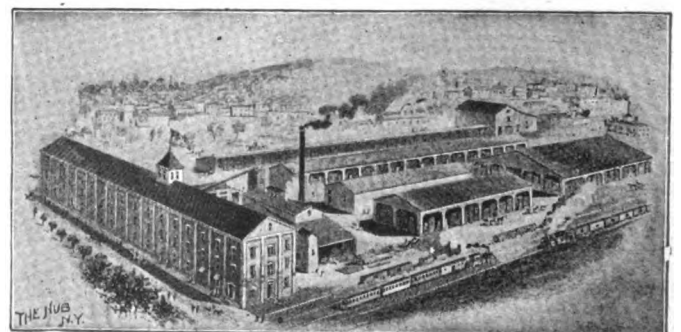
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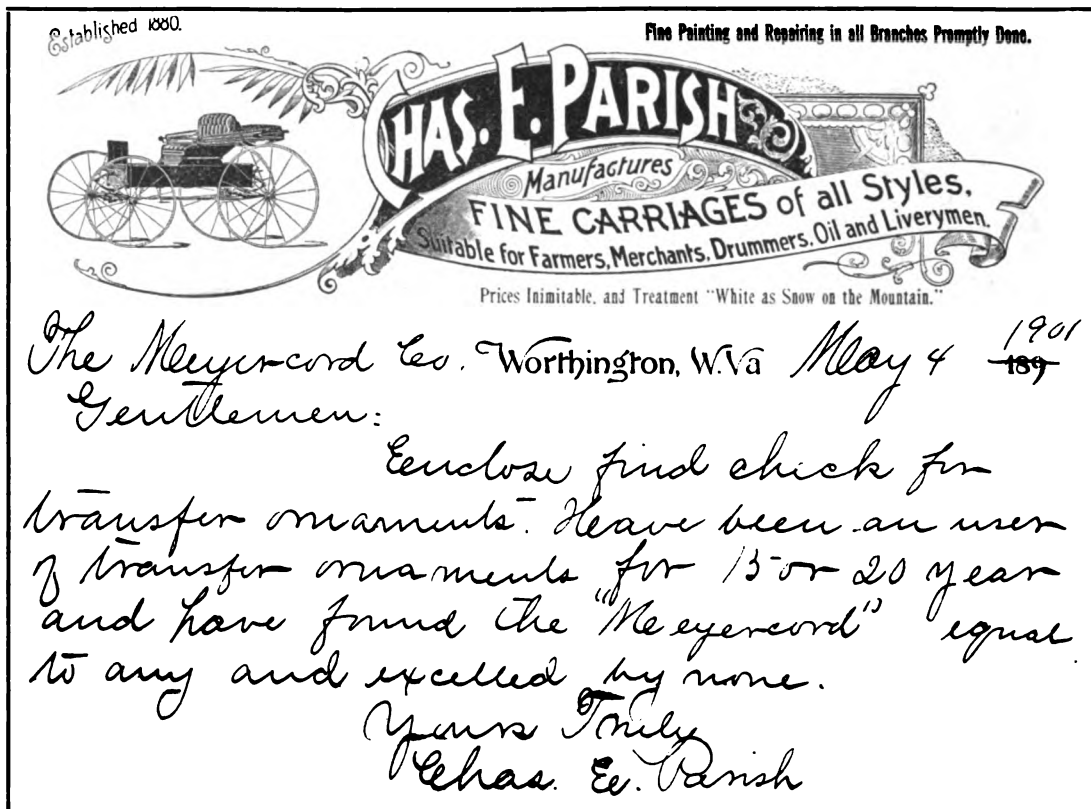
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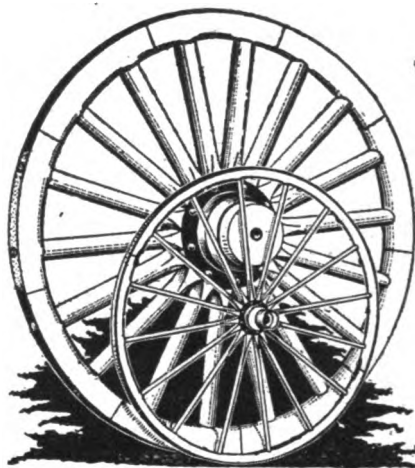
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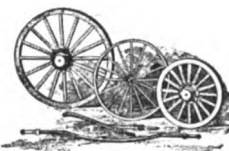
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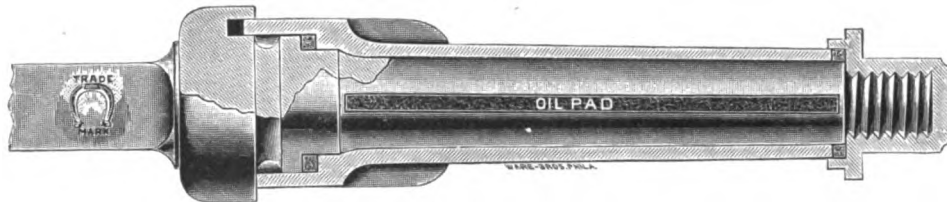
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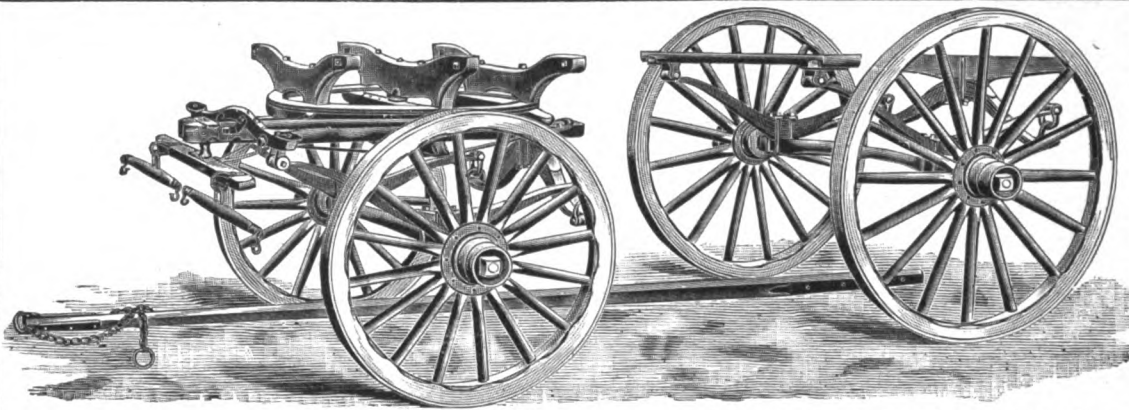


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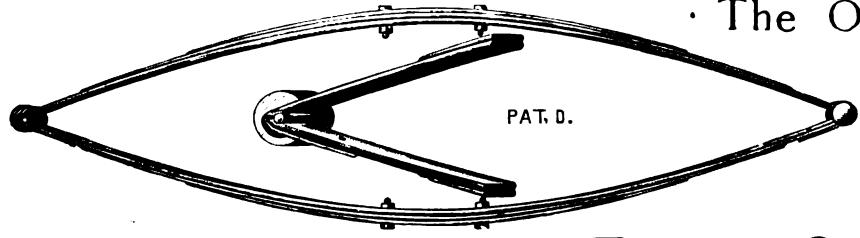
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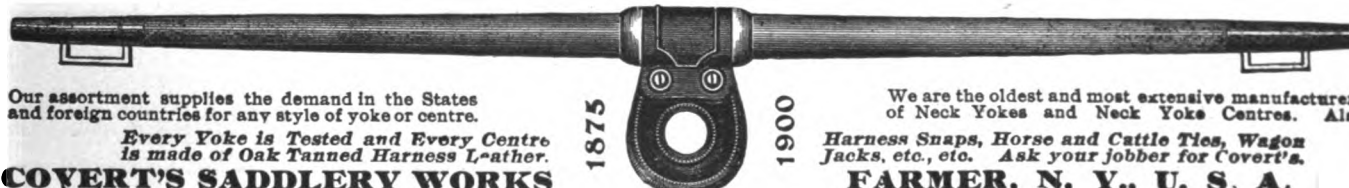


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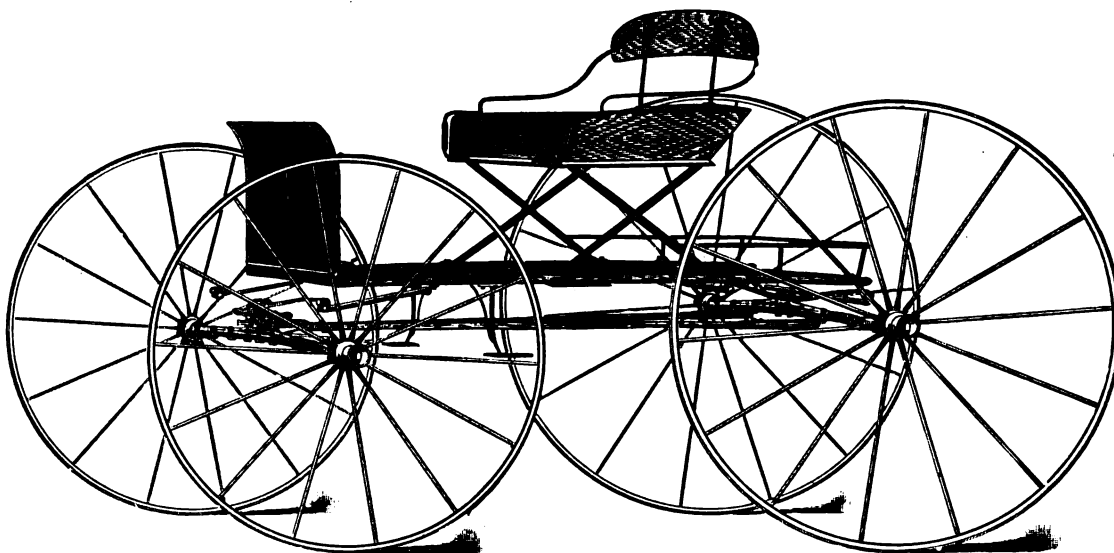


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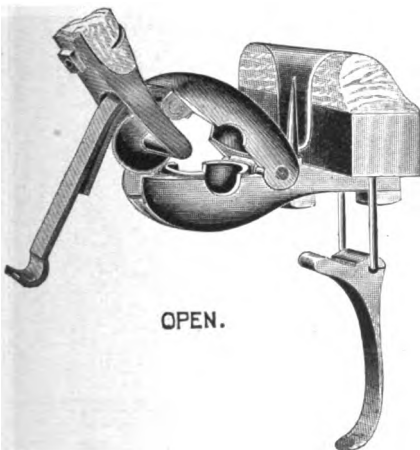
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THE Mulholland Coupler is Quick Shifting, Ball-Bearing, Leather Bushed. The Bushings are cemented into jaws and lined with Graphite. It has a non-breakable spring of uniform width and thickness, and a dirt proof flange and interlocking device. It takes up its own wear.

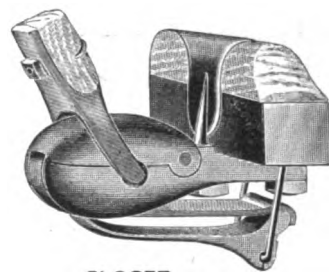
## MATERIAL USED—ALL STEEL.

THE Shaft and Pole Ends are forged from Bar Steel. The Springs are of Crucible Steel, while the Jaws, Levers, etc., are of Bicycle Steel. The STRONGEST, and it may be well to state the most EXPENSIVE materials used in Shaft Coupler construction.



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THIS IS WHAT MAKES  
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Most Perfect Shaft Coupler  
on the market. : : : : :  
A sample pair will convince  
you of its merits. : : : : :



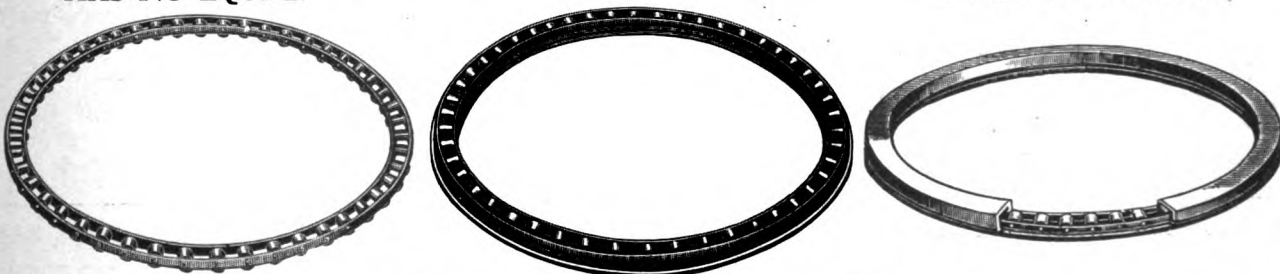
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**Mulholland Spring Co., Dunkirk, N. Y.**

# THE NIELSON Roller-Bearing Fifth Wheel.

is the only PERFECTED and PRACTICAL ROLLER-BEARING FIFTH WHEEL on the Market to-day.  
HAS NO EQUAL.

DON'T BE FOOLED.



## WHY THE NIELSON IS THE BEST.

It is the product of a practical wagon builder, who has made a careful study of his trade and the necessity of developing something new in the way of a fifth wheel that would overcome the friction caused by the old circle in use on all kinds of platform vehicles. The present fifth wheel is the outcome of years of experiment, and contains all the good features lacking on other fifth wheels. The rollers, while an important part of the Nielson patent, without the other features, would be as worthless as some others that are offered as "the best."

**Don't let anybody tell you that So and So's Roller Bearing Fifth Wheel is just as good as the Nielson.**

Roller-bearings, like ball bearings, to prove of value must be properly housed. This is one of the greatest practical points on the Nielson, as it is constructed so that neither dust nor the elements to which fifth wheels are subject can affect the rollers.

As the rollers overcome all friction, the use of oil, grease or other lubricants is obviated, and thus when once the Nielson is attached to a vehicle, the user need give this part of the vehicle no further thought, as it will outlast any vehicle. It always works easy, and never gets out of order. No worry about broken shafts or poles, as the Nielson turns easily under the heaviest load. It is a godsend to dray horses, as well as to the users of vehicles for mercantile purposes, as the Nielson not only saves the horses, but prolongs the life of the vehicle.

**YOU WANT THE BEST.**

**GET THE NIELSON**

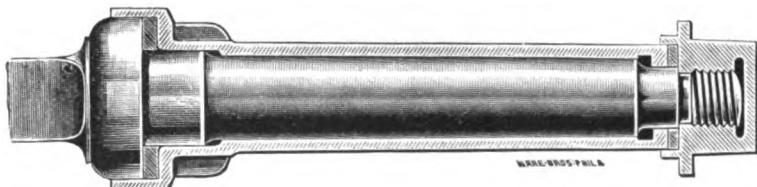
Ask your dealer or write for full particulars to

**CHRISTEN NIELSON, 745 Third Avenue,  
BROOKLYN, N. Y.**



# Doctors' Special Axle.

*This is the finest Axle on the market  
for light and medium weight Carriages.*



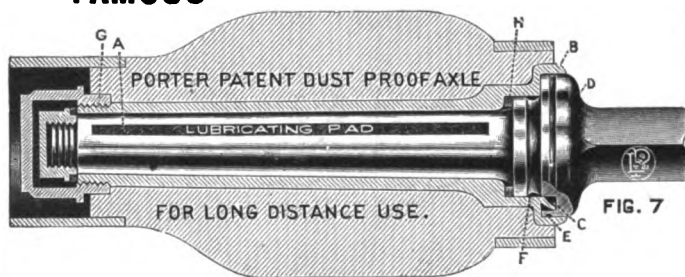
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the money than in any other  
at any price. Full particu-  
lars sent on application. \**

*To it, when desired, we can at a small extra cost apply the Brewer Longitudinal Axle Lubricator, which is the simplest device known for continual lubrication, and has the added merit of not weakening either arm or box by the removal of metal at vital points and does not allow oil to leak out. \* \* \**

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### "THE FAMOUS PORTER PATENT DUST PROOF AXLE."

FOR LONG DISTANCE USE



The only "2,500 Mile" Standard Axle in existence.

By actual test this Axle has run 2,500 miles with one oiling, and 1,500 miles with one oiling without the Lubricating Pad.

### Porter Patent Ball Bearing Axle.

This axle is fitted with the Famous Porter Patent Dust Proof Collar and V-shaped extension, making it absolutely dust and water-proof. 7,000 sets in use. Never had a ball crush. Never had a call for repairs. Write for particulars. Prices now within reach of all.

Manufactured by **LEE & PORTER**, DOWAGIAC and BUCHANAN, MICHIGAN.

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Contracts for less than one year, one-tenth above rates for each month.

Please mention "The Hub" when you write.

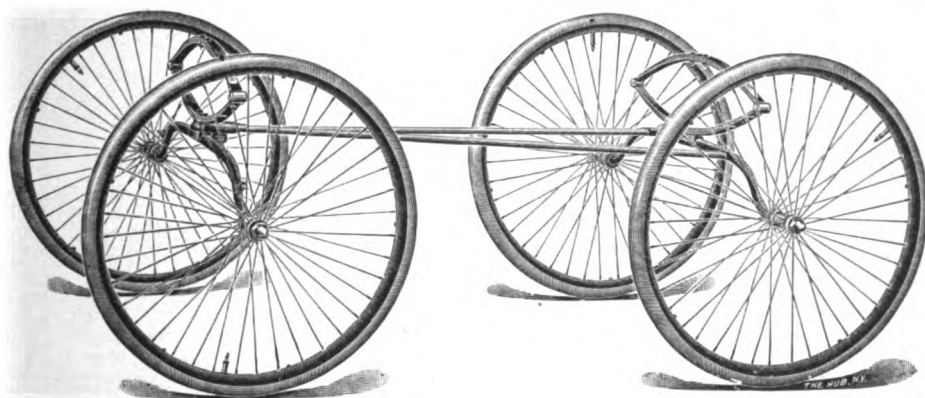


# "Empire" Model Pneumatic Gear

## THE PRODUCT OF THE

# STANDARD ANTI-FRICTION EQUIPMENT CO.

Successors to the Amesbury Pneumatic Gear Co. and Ball-Bearing Axle Department of the Chicago Screw Co.



**50 Broadway**  
**NEW YORK CITY**



This Gear is fitted with  
Empire Ball-Bearing Hubs.  
You can have Osgood  
Endless Groove Boxes  
if you prefer.

The following will show what some actual users of Empire Gears think of them:

**LAW OFFICE BARRY, MORRISSEY & FIFER,**  
Center and Washington Streets,  
Bloomington, Ills.

(Dictated.)

January 22, 1901.

GENTLEMEN: Replying to yours of the 14th, will say the ball-bearing axles on my surrey have run three years and have given the very best satisfaction. They have cost nothing for repairs. I do not know how long they would run without oiling, because I have *never yet found them dry* when wheels were taken off, and I have used it weeks at a time without taking the trouble to look at them. There is apparently no lost motion or wear, and I am thoroughly pleased with them.

Yours respectfully,

(Signed) J. J. MORRISSEY.

BLOOMINGTON, ILL., January 18, 1901.

GENTLEMEN: In the four years that I have used your ball-bearing axles I have had *no trouble or expense* with them. I have removed wheels perhaps eight or ten times in four years, and at no time did they need oiling. I cleaned and oiled them last spring and used the surrey two or three times a week since, but did not examine the axles since until to-day, and I find them in perfect condition. They are certainly a perfect axle.

Yours respectfully,

(Signed) HENRY RINGHOUSE.

**CHAS. S. CAFFREY CO.,**  
Carriage Builders, Camden, N. J.  
Warerooms:

1712 and 1714 Chestnut Street, Philadelphia.

GENTLEMEN: Replying to your favor of the 19th you may gladly use our name in your catalogue as users of

your axles, as you state. We have found your axles to be very satisfactory.

Yours truly,  
CHAS. S. CAFFREY CO.

**THE H. H. BABCOCK CO.,**  
Builders of Fine Carriages of every Description,  
Watertown, N. Y.

(Dictated G. H. B. Replying to yours of 19th.)

GENTLEMEN: You are at perfect liberty to use our name as users of your Ball-Bearing Axles, and we will say that they are as fine an axle as we have ever used, and we should take pleasure in referring any one to you who wants a fine axle. We are,

Yours very truly,  
H. H. BABCOCK CO.

**BREWSTER & CO.,**  
Broadway and 47th Street,  
New York.

GENTLEMEN: In reply to your inquiry regarding your Empire Ball-Bearing Axle, would say we put a set on one of our delivery wagons two or three years ago, which still appears to be in excellent condition, and it has been very satisfactory. We have also put two more sets on similar vehicles, and one set on one of our heavy trucks, with the same result.

As our trial of them was satisfactory we started this year to put them on a certain number of our new vehicles to be sold. These, of course, have not yet been out long enough for us to have gained any experience from them, but up to date they have given us no trouble.

Yours very truly,  
BREWSTER & CO.

The case is proved, but hadn't you better order a sample gear, and satisfy yourself that it is the best gear in the world? Everything complete (except the body) and drawfiled, ready for painting.

**Factories at Chicago, Ills., Wilkesbarre, Pa., Amesbury, Mass.**



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Helps Secure Situations.

**Carriage, Harness and  
Accessory Traveling  
Salesmen's Association**

**OF THE UNITED STATES.**

**All Commercial Travelers in Above Lines Eligible.  
No Others. Pays Death Benefits.**

**Membership Fee, - - \$3.00**

**Annual Dues, - - - - 1.00**

Employers of Traveling Men eligible to join as associate members on payment of \$5.00, and are exempt from all further dues.

Manufacturers of carriages, harness or goods that enter into their construction, jobbers of same, can secure good, reliable and efficient salesmen through our Association, as the members of this Association have the best facilities for knowing all about men who are seeking situations, and none will be recommended unless they are first class and worthy of support.

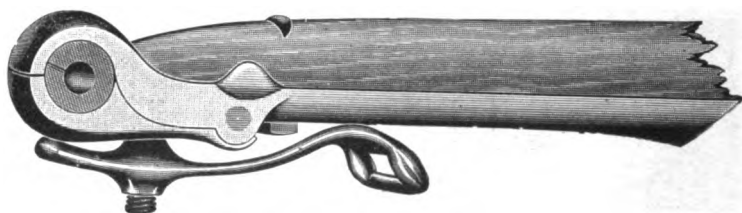
Salesmen in need of a situation, or manufacturers in need of a salesman, address for further information,

**P. D. RANDALL, Secretary.**

*Board of Trade, Springfield, Mass.*

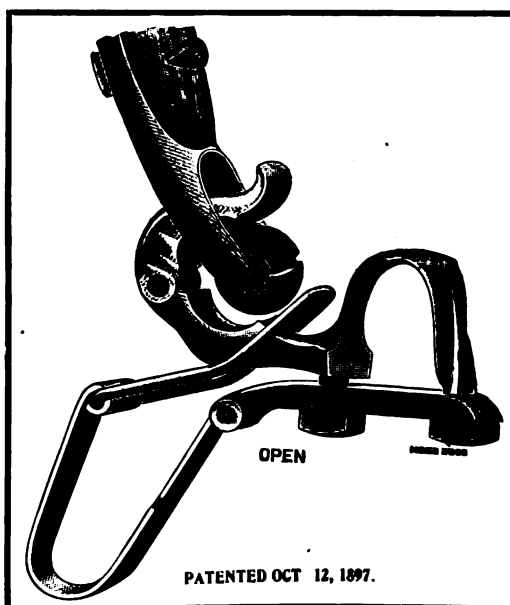
## Eccles Adjustable Shaft Eye.

PATENTED AUGUST 28th, 1904.



## Ball Bearing Shaft Coupling.

SEND FOR DESCRIPTIVE CIRCULARS AND PRICES.



PATENTED OCT 12, 1897.

ALSO GET OUR CATALOG SHOWING FULL LINE OF

**Carriage Forgings.**

**RICHARD ECCLES,**

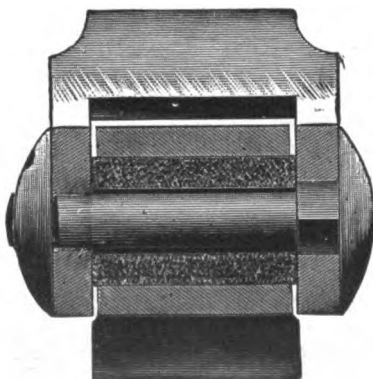
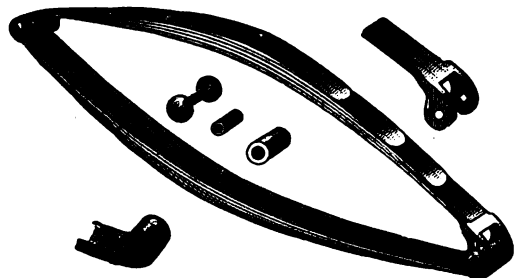
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## Elliptic and Coach Platform Springs

WITH RUBBER OPEN-HEADS.

**LARGE SIZE.**—Designed for Broughams, Landaus and Coaches.

**SMALL SIZE.**—Designed for Buggies and Light Carriages.



The Rubber Open-Head

# SPRINGS

Work Freely Without Friction.

No Binding or Squeaking in  
the Heads or Eyes.

Springs of Every Style and Pattern to order,

ALSO CURTAIN ROLLERS and CONCEALED HINGES.

Exclusively First-Class Work.—The Best that Can be Made.

**SPRING PERCH CO.,  
BRIDGEPORT, CONN.**

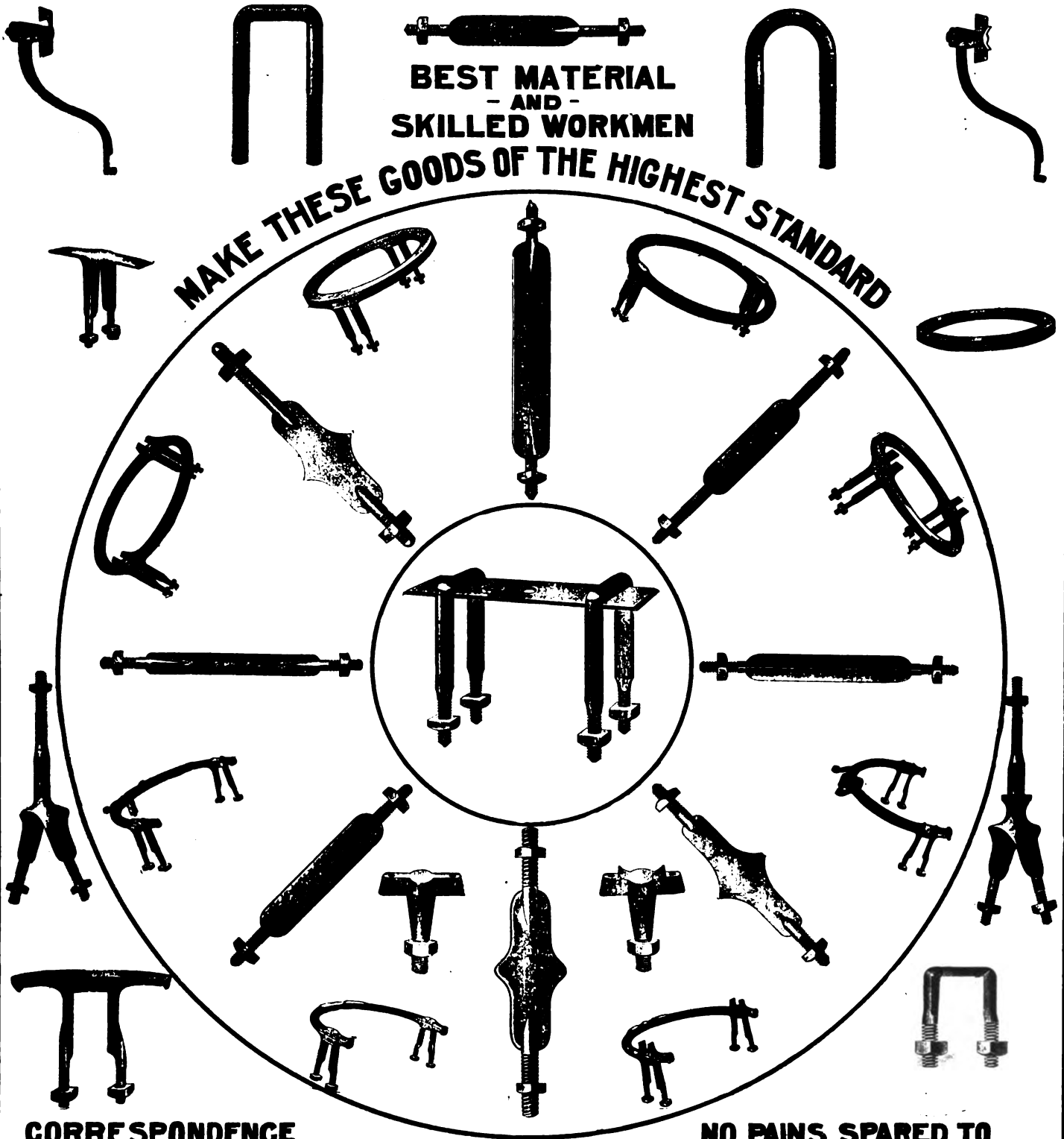
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# ONLY-A-FEW-OF-OUR-MAKE

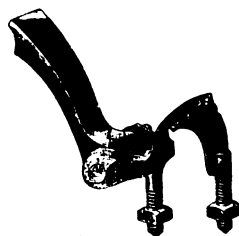
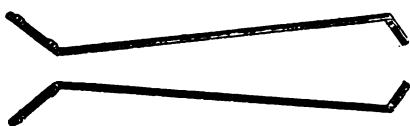
BEST MATERIAL  
- AND -  
SKILLED WORKMEN

MAKE THESE GOODS OF THE HIGHEST STANDARD



CORRESPONDENCE  
SOLICITED AND PROMPT  
REPLY ASSURED

NO PAINS SPARED TO  
MAKE OUR GOODS —  
THE BEST



CATALOGUE AND PRICES TO BE  
HAD FOR THE ASKING

THE **KEYSTONE FORGING CO.,**  
NORTHUMBERLAND, PA, U.S.A.



# THE BRADLEY SHAFT COUPLING



Quality and advantages considered, one BRADLEY SHAFT COUPLING outweighs a dozen of the common kind.

It costs a little more than some, but it is worth more and will outlast any vehicle to which it is attached.

There must be genuine merit in the Bradley All Steel, All Right, Shaft Coupling otherwise there would not be over 400,000 pairs of them in use. Wholesale carriage manufacturers know all about the Bradley, and will put them on the vehicles you buy if you insist. Why not insist?

**C. C. BRADLEY & SON,**  
SYRACUSE, N. Y.

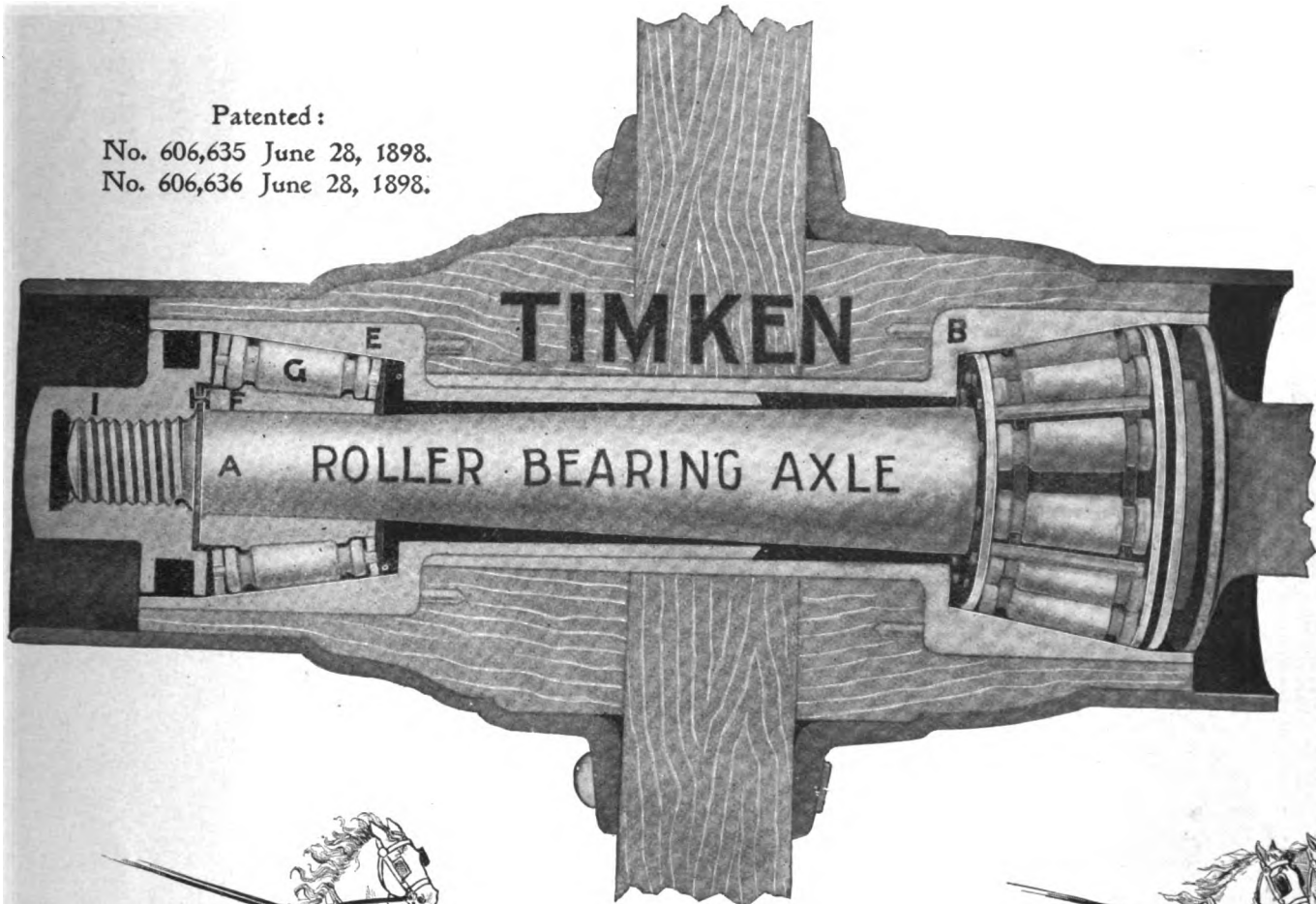


**SIMPLE.**

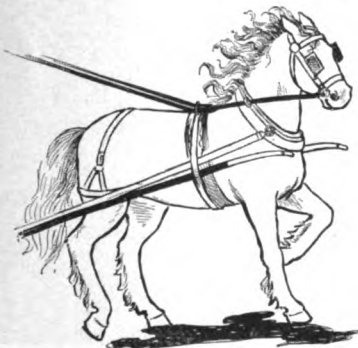
**DURABLE.**

**IF VEHICLES ARE EQUIPPED WITH**

Patented:  
No. 606,635 June 28, 1898.  
No. 606,636 June 28, 1898.

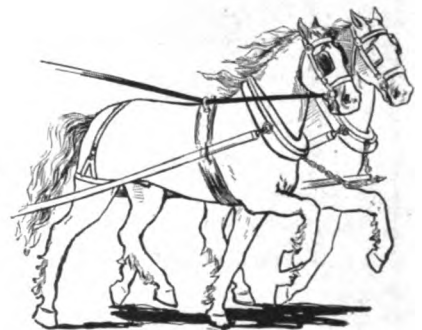


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does  
the  
work  
of


**TWO**



**Over 50 per cent. Reduction of Draft.**

**AXLES REQUIRE OILING ONLY TWICE A YEAR.**

Adapted to all vehicles from the lightest speeding wagon to the heaviest truck. Also the best bearing on earth for automobiles.

**If, After Six Months from date of shipment, you are not satisfied with the working of the Timken Roller Bearing Axles you may freight them back to us and we will refund amount paid us for same.** 

**ADDRESS ALL COMMUNICATIONS TO**

**Timken Roller Bearing Axle Co.**

Branches:  
BOSTON: 29 Beverly Street.  
BROOKLYN: 40 Boerum Place.  
PHILA.: Fulton & Walker Co.  
(Wagon Builders).

Department E,

**3100-3110 No. 2d St., ST. LOUIS, MO.**

Stock of Axles also carried at our NEW YORK OFFICE, 1769 BROADWAY.

Please mention "The Hub" when you write.



# • THE • BAKER BALL BEARING AXLES

THE MOST NEARLY PERFECT ANTI-FRICTION AXLES IN THE WORLD.



SPEED WAGON OF A. E. PERREN, BUFFALO, N. Y.

OFFICE OF  
**A. E. PERREN,**  
CARRIAGE BUILDER.

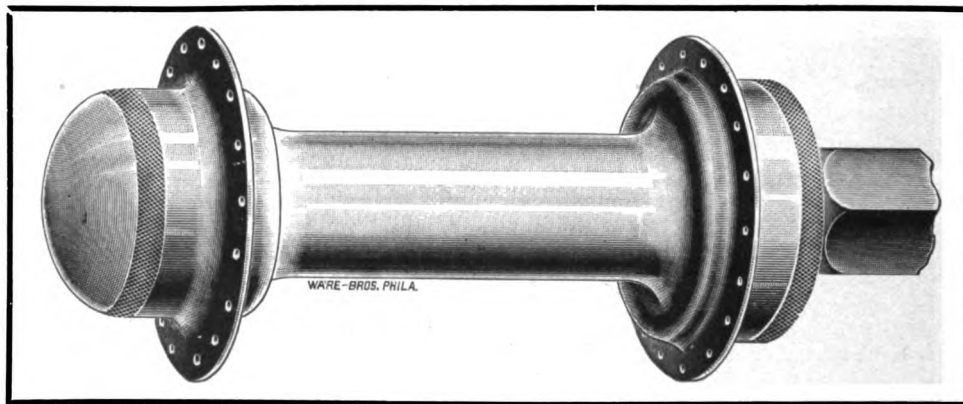
**UNITED STATES BALL BEARING CO., NEW YORK CITY.**

GENTLEMEN :

I was the first manufacturer in this or any other country to make the low wheel, ball bearing, pneumatic tire wagon. Naturally I was anxious to have a perfect wagon, and with that end in view I tried and tested every ball bearing axle that had any reputation at all, but I find that *yours is the best* in my judgment, as it is easy running, easy of adjustment and easy to clean, and water does not get in when washing the wagon. This axle was on the sixty-five pound wagon to which I gave my horse "True Chimes" a half mile road wagon record at the Empire City track, New York City. He went the half mile in 1:02 $\frac{3}{4}$ , the last quarter in 31 seconds. As the axle forms such an important part of a wagon, I consider myself fortunate in being able to buy such a superior one as you turn out.

Yours truly,

A. E. PERREN.



## UNITED STATES BALL BEARING CO. NEWBURCH, N. Y.



# The McGOVERN COLD TIRE SETTING MACHINE

## HAND AND POWER MACHINES

TO SUPPLY THE DEMANDS OF THE  
CARRIAGE AND WHEEL TRADE, AND ALSO THE BLACK-  
SMITH AND GENERAL REPAIRER.

A power machine with an automatic attachment, and where the operator has absolute control of the machine; can stop or start it instantly at any point in its operation.

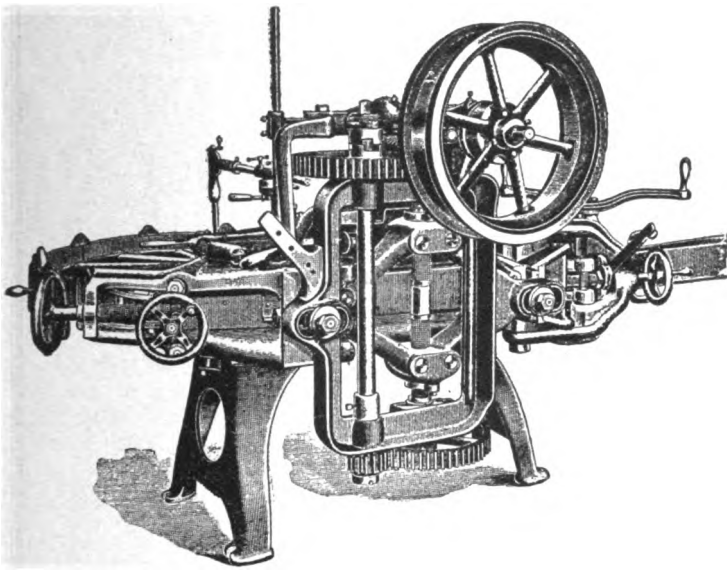
Simple in construction. Powerful in operation. Reasonable in price. Does its work thoroughly, accurately and rapidly, giving proper and uniform dish to wheels.

### THE NEW MODEL McGOVERN COLD TIRE SETTING MACHINE

with its increased capacity, simplicity and strength, all three points being more than tripled in this new machine, we guarantee to set Tires ranging from  $\frac{1}{4}$  inch to  $2\frac{1}{4}$  inch  $\times$   $\frac{3}{4}$  inch. Our daily capacity from 800 to 1,000 wheels.

We shall be at the Pan American Exposition in Buffalo. Our machine will be in operation at the factory of the Buffalo Spring & Gear Co., three minutes walk from the grounds.

**The Tire Setting Machine Co.,  
LIME ROCK, CONN.**



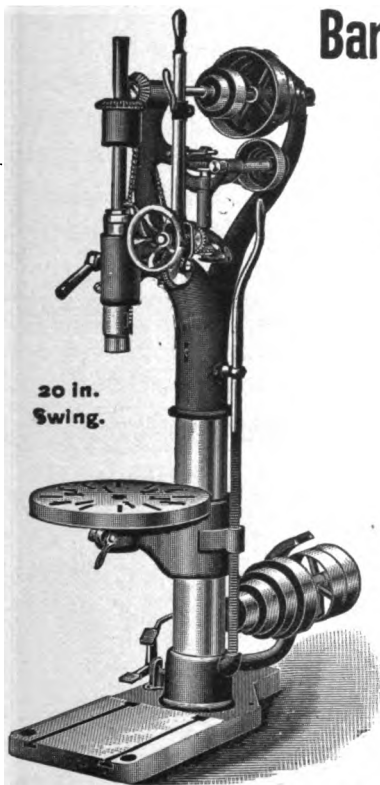
## Barnes' Upright Drills,

8 in. to 42 in. Swing.

Single, Back Geared,  
Multiple Sliding Head,  
"Series," Stationary Head.  
Power Feed, Worm Feed,  
Automatic Stop, Lever Feed.

Send for Catalogue.

**W. F. & Jno. Barnes Co.,**  
588 Ruby St., Rockford, Ill.



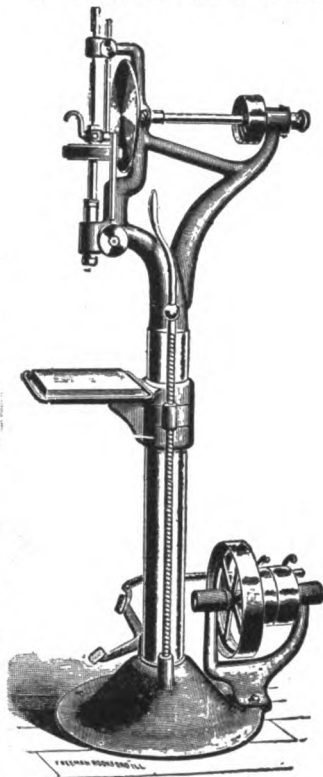
20 in.  
Swing.

### BARNES' New Friction Disk Drill. FOR LIGHT WORK.

Has these Great Advantages:

The speed can be instantly changed from 0 to 1000 without stopping or shifting belts. Power applied can be graduated to drive, with equal safety, the smallest or largest drills within its range—a wonderful economy in time and great saving in drill breakage. Send for catalogue.

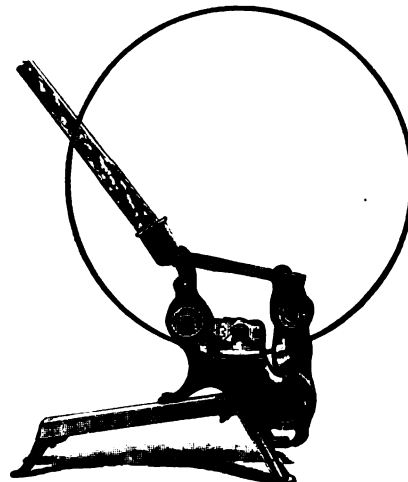
**W. F. & Jno. Barnes Co.,**  
588 Ruby St., Rockford, Ill.



## THE IDEAL TIRE UPSETTER.

The advantages of the Ideal are:

- The tire cannot kink.
- One man can operate it.
- One movement does the work.
- It will shrink light Buggy tire.
- It will shrink Heavy Wagon tire.
- It will shrink Truck tire.
- It will shrink perfectly all kinds and thicknesses of tire.
- It is the easiest handled.
- It is the most durable.
- It is the latest and best.



Send for Circular and Price.

Manufactured only by

**WEYBURN & BRIGGS CO. 718 Main St., Rockford, Ill., U.S.A.**



## CLIMAX WELDING COMPOUND.

It Welds Steel Tires, Axles and Springs as Easily as Iron.

HARDWARE DEALERS SELL IT.

SAMPLES SENT ON RECEIPT OF 10c. IN STAMPS.

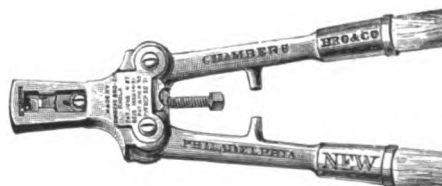
**CORTLAND WELDING COMPOUND CO.,  
CORTLAND, N. Y.**

## SMALL CUTS FOR ADVERTISEMENTS.



We carry a special line of new cuts of up-to-date vehicles, and will send you sample proofs if you will let us know what you want. Price 75c., postage paid  
**TRADE NEWS PUB. CO. NEW YORK**

Please mention "The Hub" when you write.



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**Chambers Brothers Co.**  
52d Street, below Lancaster  
Avenue,  
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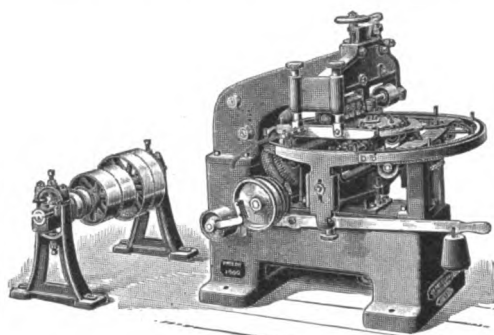
# Manufacturers of Wood Working Machinery

ADAPTED ESPECIALLY FOR

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## Grand Prix

The spoke is automatically presented to the cutter head on such an angle that a clean shear cut is made with absolute accuracy without tearing out or making culls.



No. 51. Patent Automatic Rotary Spoke Facing Machine.

## Paris 1900.

It faces more spokes with absolute accuracy than any other machine. Capacity 1800 spokes per hour.

Send for catalogue of this valuable labor saving machine.

# J. A. FAY & EGAN CO.,

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Better and Cheaper than Rubber.  
The Largest Builders Use Them.

Get Samples and Prices.

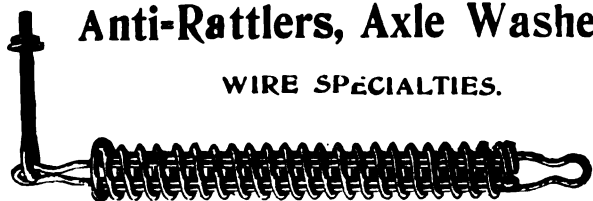
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MANUFACTURERS OF

Brake and Pole Springs,  
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WIRE SPECIALTIES.



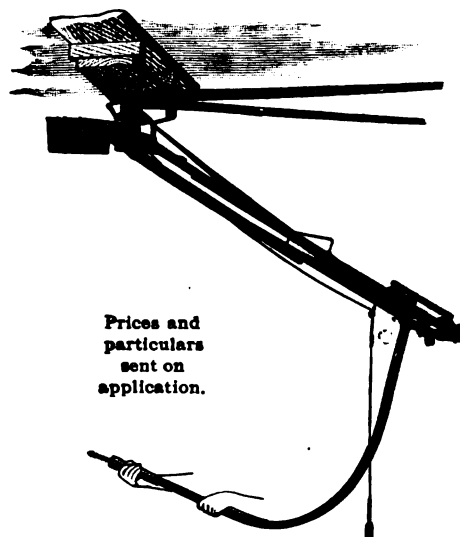
IMPROVED POLE SPRING.

## FLEXIBLE BORING... MACHINE.



Perfected.

Bores holes at any angle within a circle of twenty feet or more. USES FLAT BELT. Has bearings of friction pulley covered, thus overcoming every objection made to the old machine, of which there are thousands in daily use.



Prices and particulars sent on application.

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# LABOR-SAVING MACHINERY

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**PUNCHING,**

**SHEARING,**

**TIRE WELDING,**

**BENDING AND**

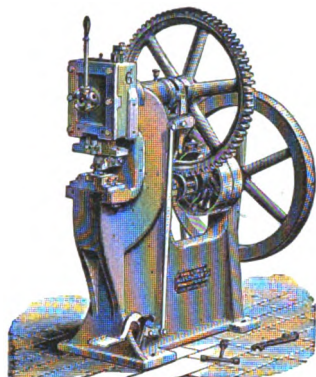
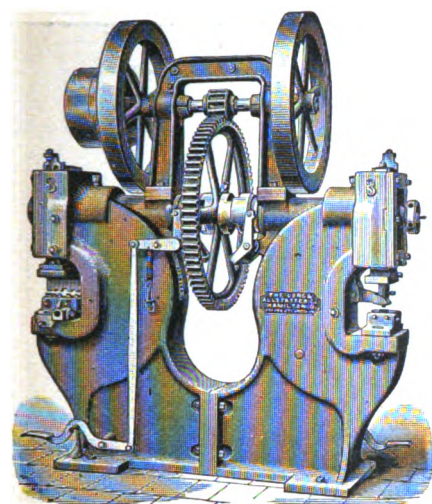
**FORMING,**

....FOR....

*Carriage Shops*

*Wagon Works, Etc., Etc.*

DESIGNED AND MANUFACTURED BY



## THE LONG & ALLSTATTER CO.

HAMILTON, OHIO, U. S. A.

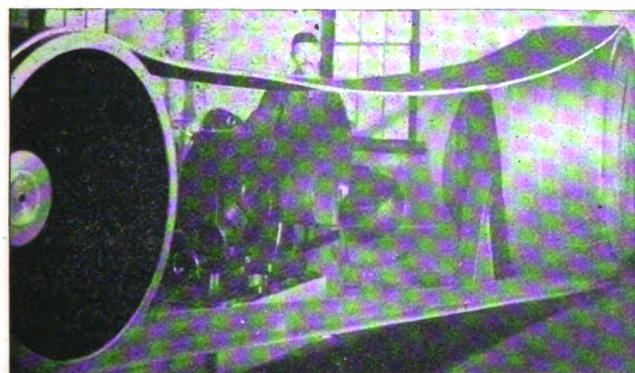
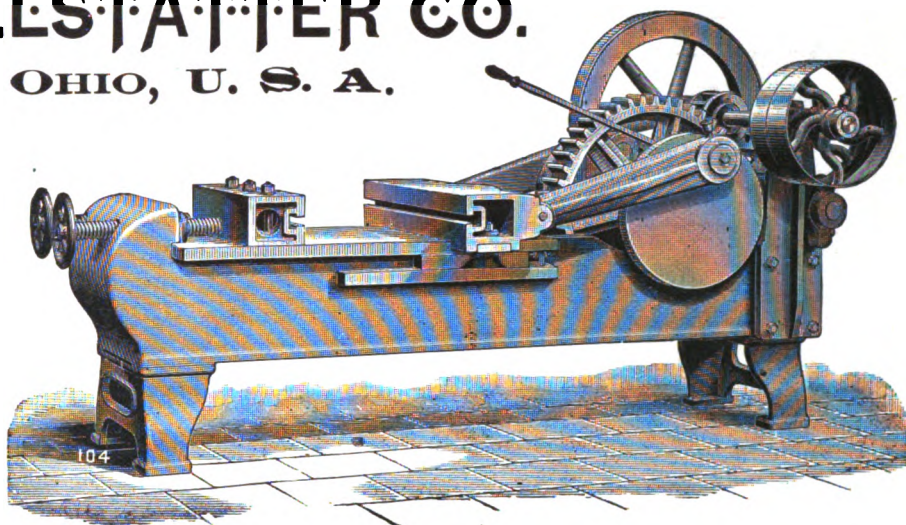
*...Also make Machinery...*

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**ROLLING MILLS,  
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RAILROAD SHOPS,  
BOILER WORKS,  
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If Interested write for Catalogue.

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## Make Your Belts Work.

Cling-Surface will make them carry every pound you ask them to.

Cling-Surface is a belt filler and preservative. It permanently stops belt slipping without making the belts sticky.

As the belts cannot slip they can run easy—never heating bearings, never running off, needing almost no taking-up or attention. Power greatly increased.

Cling-Surface penetrates into a belt, so the latter can be kept clean.

We guarantee the above and ask an order on trial, to be paid for only if satisfactory after use.

Try it on your Auto Speed Regulators.

**CLING-SURFACE MFG. CO.,**

135-141 Virginia Street,  
BUFFALO, N. Y.

New York, Boston, Philadelphia, Chicago, St. Louis, New Orleans.

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## ROLLER CHAFE IRONS

we have the

**BETTER THING.**

**Boston Roller &  
Chafe Iron Co.,**

178 Devonshire St.,

BOSTON, MASS.

This is an age of Improvement.

The Good Thing of yesterday is superseded by the Better Thing of To-day.

**NO OIL**

**NO GREASE**

**The TURNER Roller Bearing Fifth Wheel**

**The BRADSHAW Spool Roller Bearing Fifth Wheel**

**The KING Patent Roller Bearing Fifth Wheel**

These are by far the BEST and CHEAPEST Roller Bearing Fifth Wheels on the Market for all kinds of Vehicles.

SEND FOR CIRCULARS AND PRICE LISTS

**THE TURNER MANUFACTURING COMPANY**

245 BROADWAY, NEW YORK



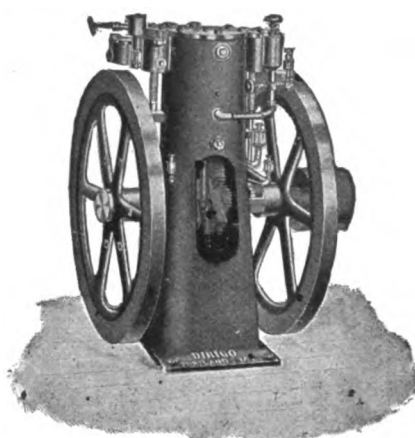
# OUR MACHINES

Set tires tight, and they stay tight. Give uniform dish to wheels, and they hold the dish. Compress the tire equally at all points, leaving the wheel in proper condition. Give general satisfaction to our customers.

Write for catalog with list of users and testimonials.



**The West Tire Setter Co.**  
Rochester, N. Y.



## Dirigo Gasoline Engines

Are simple, durable and reliable ; they are absolutely safe ; shavings, sawdust or any kind of material, if piled all over them, would not take fire. No exposed flame on them anywhere. They require no attention; can be started in the morning and will run all day, or you can start up a thousand times a day, as it takes but a second to start them, and there is no expense when not working. For a power for the carriage, blacksmith or machine shop, or for any place where power is required, they are the most economical and most reliable. Send for full particulars. H. Dirigo Engine Works, Portland, Maine.

...FIRST MADE IN AMERICA...

## "HAY-BUDDEN," SOLID WROUGHT ANVILS.



MADE OF Best AMERICAN Wrought Iron.

Best AMERICAN Cast Steel.

FORGED BY Best AMERICAN Workmen.

Experience has proven their worth and demonstrated that the **Hay-Budden Anvils** are **Superior** in **Quality, Form and Finish** to any on the market.

**FULLY WARRANTED.**

**SEND FOR DESCRIPTIVE CIRCULAR.**

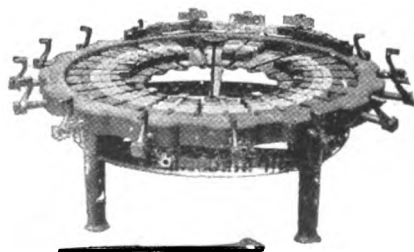
**HAY-BUDDEN MFG. CO.,** 254-278 NORTH HENRY STREET, BROOKLYN, N. Y.

Received Gold Medal, Highest Award for Anvils, at Omaha Exposition, 1898.

## Repair Shops, Take Notice.

THE HENDERSON HAND POWER TIRE SETTER IS A MONEY-MAKER.

Prices from \$150 to \$215.



WRITE TO THE  
**STANDARD TIRE SETTER CO., KEOKUK, IOWA.**

Best Investment in Machinery Line.

WAVERLY, ILL., Sept. 22, 1900.  
*Gentlemen:*—In reply to yours of the 29th of August, 1900, I will say that the tire setter I bought from you last fall at the Springfield fair is the best investment I ever made in the machinery line. It does the work quickly, satisfactorily and substantially. Have set about 100 tires of all kinds this summer. I am well pleased with it. It brings extra patronage to a repair shop.

Respectfully,  
H. J. RODGERS.

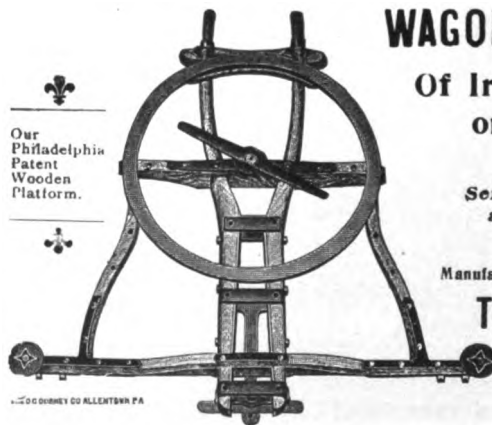
## BEST PLATFORMS AND COMPLETE WAGON GEARS.

Of Iron, Steel or Wood.

Send for Catalogue and Price List.

Manufactured by

**THE ALLENTOWN PLATFORM CO**  
ALLENTOWN, PA., U. S. A.



Please mention "The Hub" when you write.



ESTABLISHED 1850.

# The Defiance Machine Works,

DEFIANCE, OHIO.

Inventors and Builders of

## Wagon and Carriage Machinery,

HUB MACHINERY,  
SPOKE MACHINERY,  
WHEEL MACHINERY,  
RIM MACHINERY,  
SHAFT MACHINERY,  
POLE MACHINERY,  
NECK-YOKE MACHINERY,  
SINGLE-TREE

MACHINERY,

BARREL HOOP

MACHINERY,

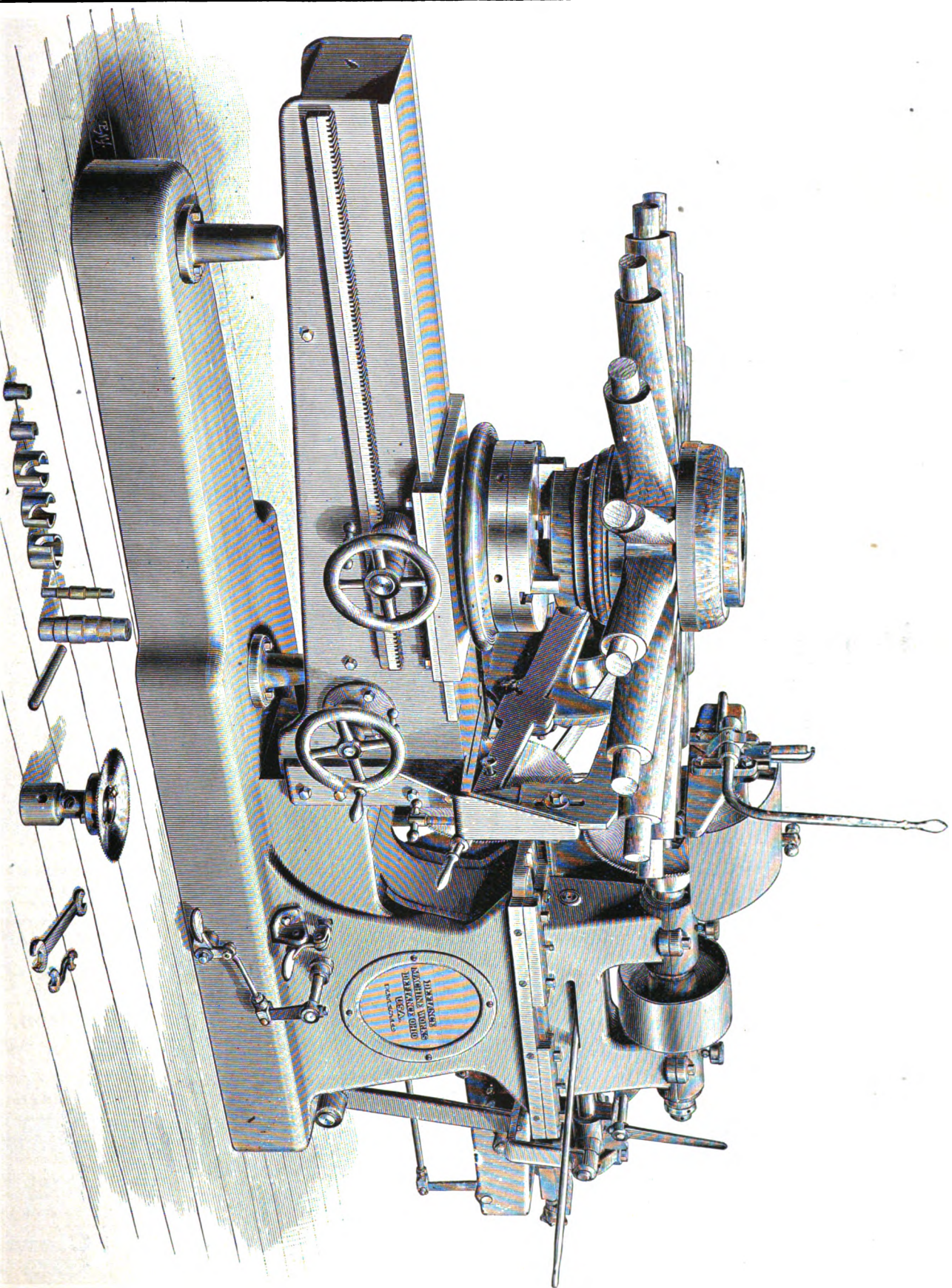
HANDLE MACHINERY,

BOBBIN MACHINERY,

AND

OVAL WOOD DISH

MACHINERY.



**No. 3 Patent Automatic Heavy Wheel Tenoning and Cut-Off Machine.**

Export Shipping Weight, 5,500 Pounds.

Net Weight, 4,500 Pounds.

Cubic Measurement, 193 Feet.

Cable Word, TONAWANDA.

*The Hub*



# "Silver's" New Band Saws

CARRIAGE MAKERS,  
WAGON MAKERS AND  
WOOD SHOPS OF EVERY KIND.

## IN SIZES:

20 in. machine for foot or belt power.  
24 in. machine for foot or belt power.  
32 in. machine for belt power.  
36 in. machine for belt power.

## LIST PRICES,

**\$50.00 to \$130.00.**

Special Discount to Carriage  
and Wagon Makers.

These machines are symmetrical and modern in design, and absolutely rigid and strong for the heaviest work coming within the range of each machine.

Ask for 1899 12 page  
Circular showing all  
sizes.

Manufacturers also of "DOLE'S"  
and "SILVER'S" HUB BORING MA-  
CHINES, "DOLE & DEMING" SPOKE  
TENON MACHINE, "SILVER'S" and  
"ADVANCE" DRILLS, Etc., Etc.

EVERY MACHINE GUARANTEED.

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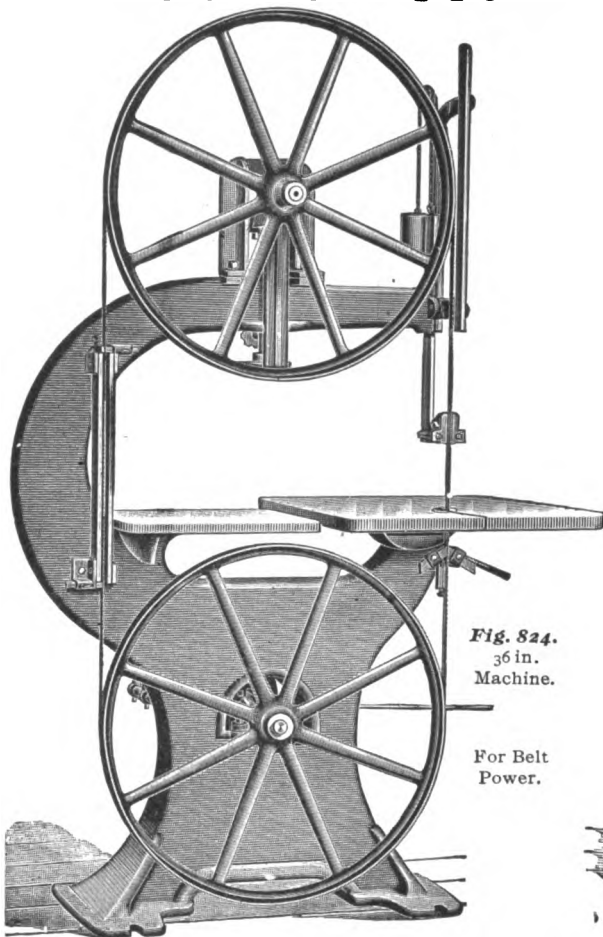


Fig. 824.  
36 in.  
Machine.

For Belt  
Power.

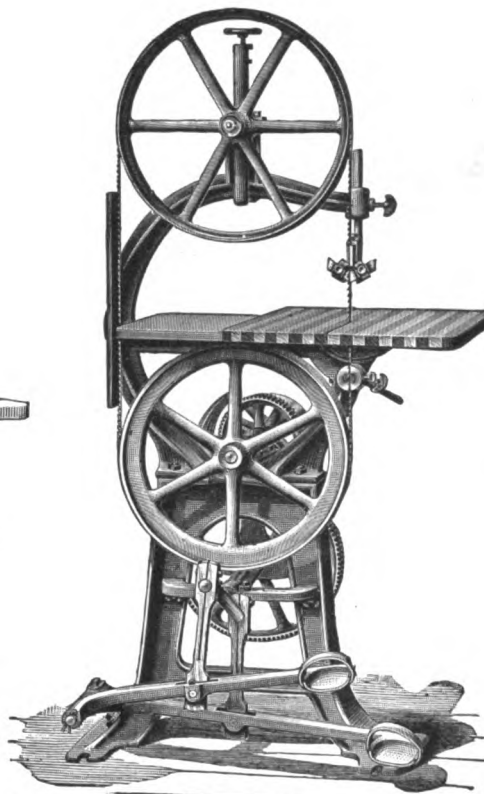
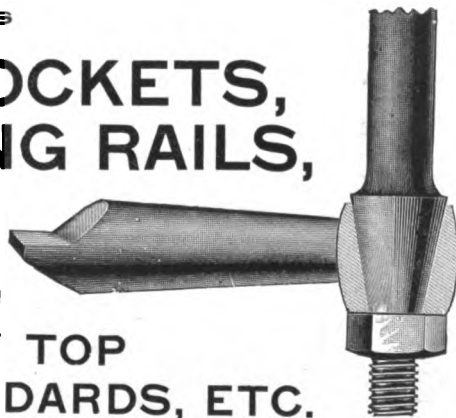


Fig. 721.  
20 in. Machine. Combined Foot or Belt Power.

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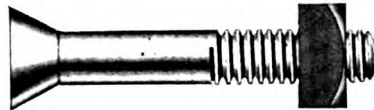
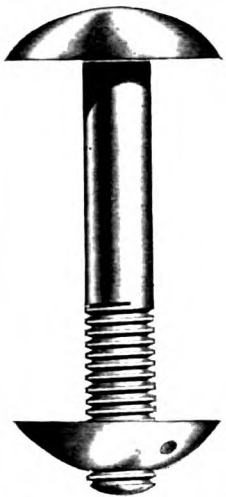
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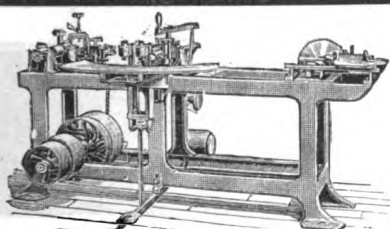
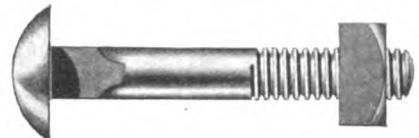


# BOLTS AND NUTS

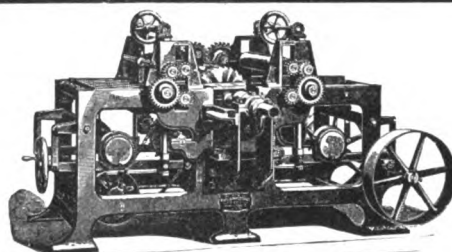
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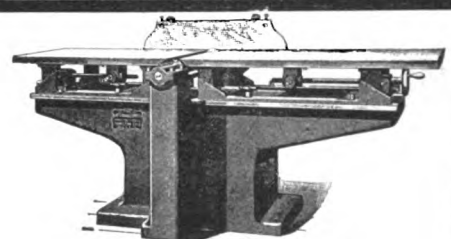
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Hydrostatic Wheel Box Press No. 287.

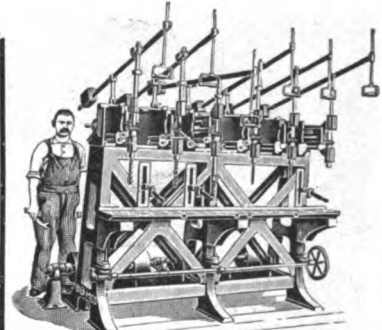
**THE BENTEL AND MARGEDANT COMPANY**

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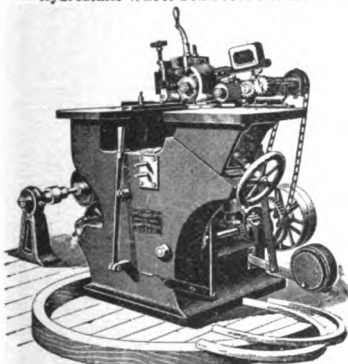
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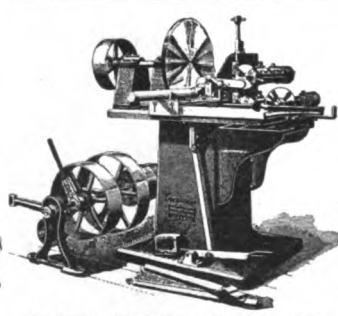
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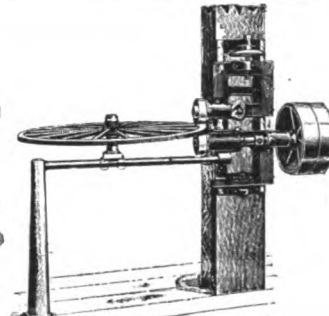
Vertical Six Spindle Gang Boring Machine.



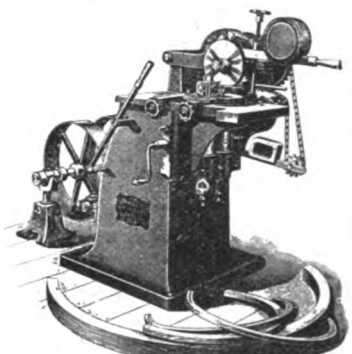
Heavy Two-Side Rim Planer No. 384



Spoke Cutoff Tenon Truing and Facing Machine No. 257.



IMPROVED TIRE TRUING MACHINE No. 316.



Heavy Two-Side Rim Planer No. 383

## SLEIGH COUPLINGS AND CLIPS.

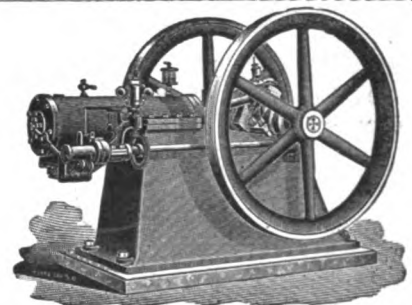
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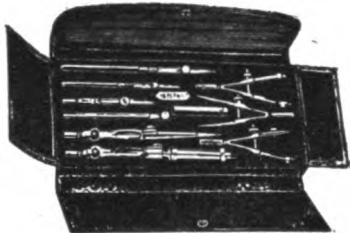
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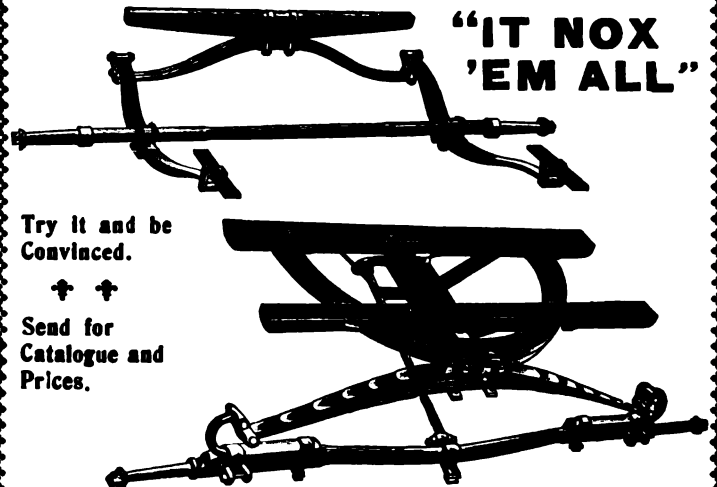


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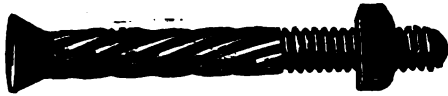
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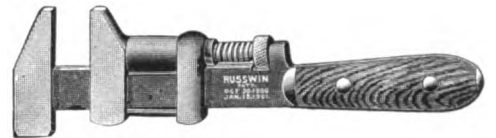
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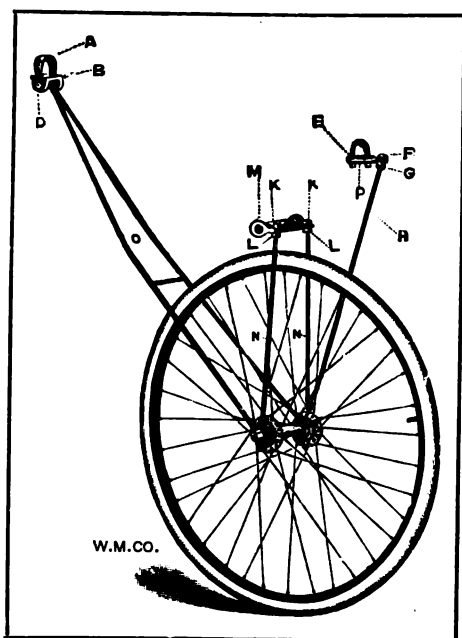
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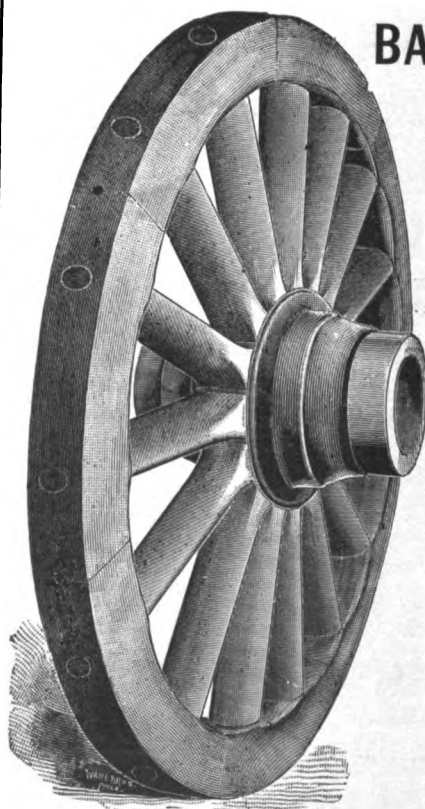
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
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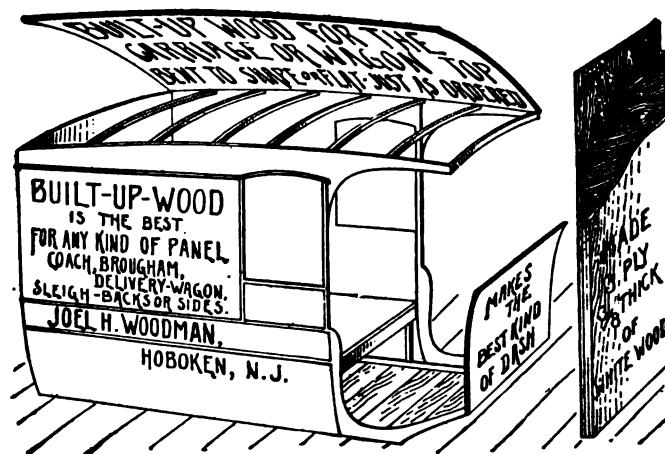
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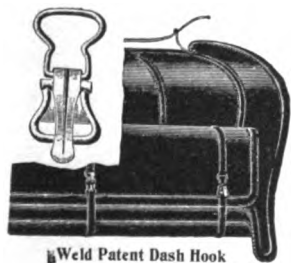
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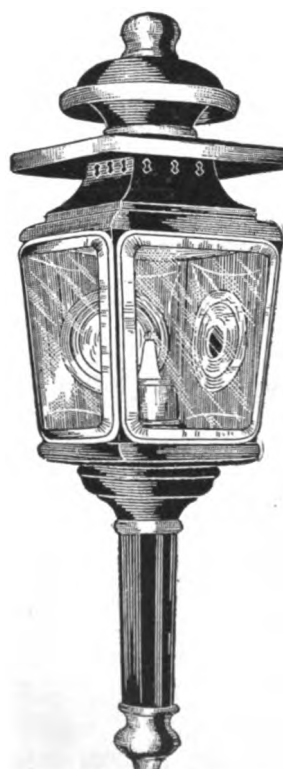
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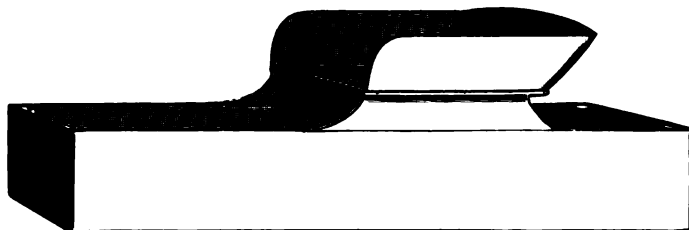




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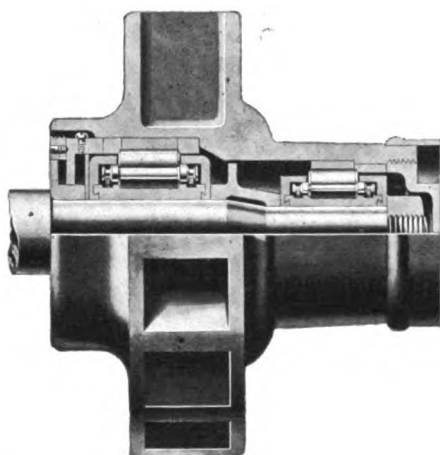
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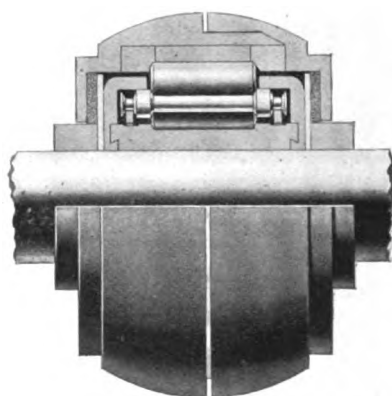
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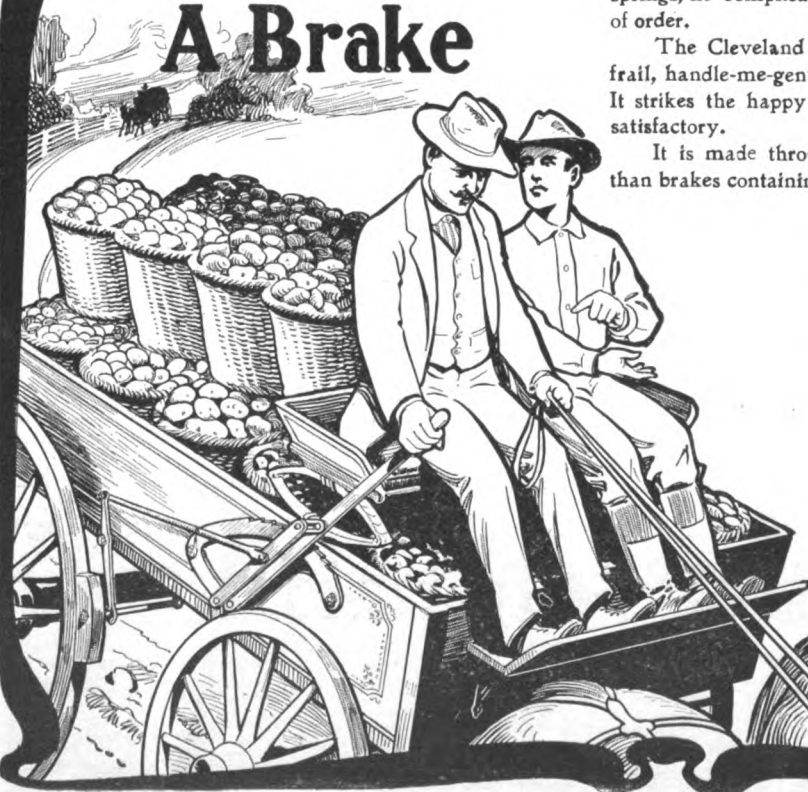
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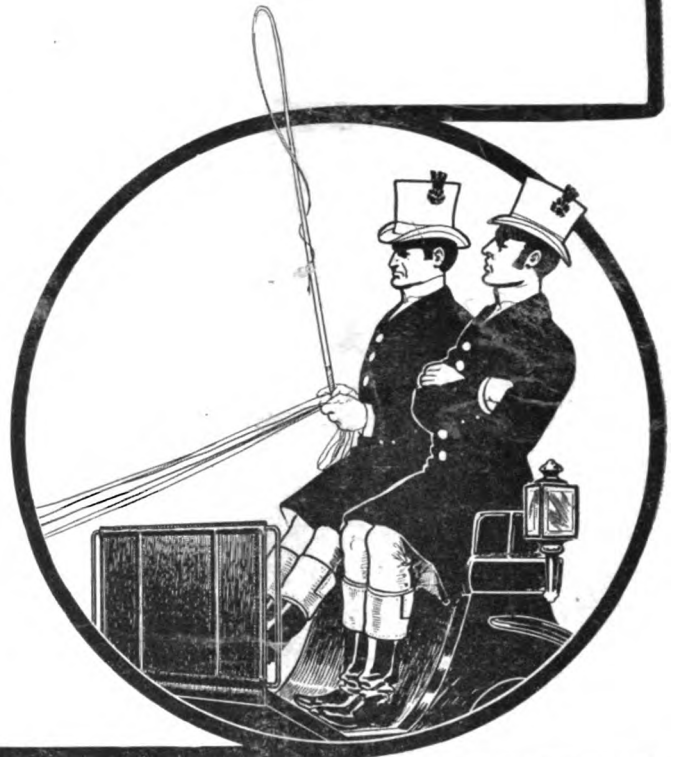
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